

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:31:03 ; Search time 93.91 Seconds

(Without alignments)
172.684 Million cell updates/sec

Title: US-09-802-365-2

Perfect score: 787
Sequence: 1 PALPEDGSGAPPPGHFKDP.....GPKTGPCKAILFLPMASAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 11073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :

A_Geneseq_032802:*

- 1: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1980.DAT:*
- 2: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1981.DAT:*
- 3: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1982.DAT:*
- 4: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1983.DAT:*
- 5: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1984.DAT:*
- 6: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1985.DAT:*
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- 8: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1987.DAT:*
- 9: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1988.DAT:*
- 10: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1989.DAT:*
- 11: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1990.DAT:*
- 12: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1991.DAT:*
- 13: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1992.DAT:*
- 14: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1993.DAT:*
- 15: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1994.DAT:*
- 16: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1995.DAT:*
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- 19: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1998.DAT:*
- 20: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1999.DAT:*
- 21: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA2000.DAT:*
- 22: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA2001.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	787	100.0	146	8 AAP71145	Basic fibroblast g
2	787	100.0	146	13 AAR25943	Bovine basic FGF.
3	787	100.0	146	13 AAR27717	Mammalian basic FG
4	787	100.0	146	21 AAY87848	Bovine FGF-2 prote
5	787	100.0	146	21 AAY81941	Recombinant bovine
6	787	100.0	146	22 AAEL1973	Bovine fibroblast
7	787	100.0	147	9 AAP80613	Sequence of manufa
8	787	100.0	147	10 AAP90085	Bovine basic fibro
9	787	100.0	155	8 AAP70671	Sequence of bovine
10	787	100.0	155	18 AAW20029	Recombinant bovine
11	787	100.0	155	22 AAEL1975	Bovine fibroblast

12	787	100.0	273	22 AAB49978	3-D structure, dete
13	776	98.6	146	9 AAP82579	Human basic fibrob
14	776	98.6	146	13 AAR25423	bFGF derivative.
15	776	98.6	146	21 AAY87847	Human FGF-2 protei
16	776	98.6	146	22 AAEL1974	Human fibroblast g
17	776	98.6	146	22 AAG62612	Human basic insul
18	776	98.6	148	13 AAR22233	bFGF truncated at
19	776	98.6	153	16 AAR71414	Human basic fibrob
20	776	98.6	154	16 AAR71413	Human basic fibrob
21	776	98.6	154	17 AAR89473	Human basic fibrob
22	776	98.6	155	8 AAP70301	Sequence of human
23	776	98.6	155	10 AAP94038	Human basic fibrob
24	776	98.6	155	11 AAR05314	Human basic fibrob
25	776	98.6	155	13 AAR22232	bFGF truncated at
26	776	98.6	155	14 AAR40159	Human bFGF peptide
27	776	98.6	155	15 AAR53270	glu3.5 hbFGF. Hom
28	776	98.6	155	16 AAR80777	Fibroblast growth
29	776	98.6	155	16 AAR70204	Human bFGF. Homo
30	776	98.6	155	16 AAR70823	FGF-2. Homo sapie
31	776	98.6	155	16 AAW33338	Human fibronectin
32	776	98.6	155	18 AAW19595	Biologically activ
33	776	98.6	155	19 AAV05456	Fibronectin recept
34	776	98.6	155	19 AAW5712	Fibroblast growth
35	776	98.6	155	19 AAW71386	SSV mutant of fibr
36	776	98.6	155	19 AAW71379	18 kDa form of fib
37	776	98.6	155	19 AAW53023	Fibroblast growth
38	776	98.6	155	20 AAW99380	18 kD isoform of h
39	776	98.6	155	21 AAB10298	Fibroblast growth
40	776	98.6	155	21 AAY6873	Human fibroblast g
41	776	98.6	155	21 AAY6885	Human fibroblast g
42	776	98.6	155	21 AAY6893	Human fibroblast g
43	776	98.6	155	21 AAY90411	FGF-2 (bFGF), SEO
44	776	98.6	155	21 AAY90448	Human FGF-2 (bFGF)
45	776	98.6	155	21 AAY32334	Human fibroblast g

ALIGNMENTS

RESULT 1	
AAAP71145	AAAP71145 standard; protein: 146 AA.
ID	AAAP71145;
AC	AAAP71145;
XX	11-MAR-1991 (first entry)
DT	Basic fibroblast growth factor.
DE	Basic fibroblast growth factor.
XX	Mitogenic; angiogenic; bFGF.
KW	Bos taurus.
OS	W08607595-A.
XX	31-DEC-1986.
PD	18-JUN-1986; 86WO-US01318.
XX	20-JUN-1985; 85US-0747154.
PR	(SALK) SALK INST FOR BIOL STUD.
XX	Esch FS, Bohnen P, Baird A, Gospodarowicz DJ, Ling NCK;
XX	WPI. 1987-007193/01.
DR	Pure basic fibroblast growth factor - produced by inserting
XX	synthesised DNA chain into cloning vector and producing
PT	transformed cell lines.
PS	Claim 1; Page 24; 29pp; English.
XX	

CC may be used in a pharmaceutical composition for diagnostic or
CC therapeutic uses. This may be used in in vitro cell proliferation
CC procedures, eg. nerve regeneration and wound healing.

SO Sequence 146 AA:

Query Match 100.0%; Score 787; DB 13; Length 146;
Best Local Similarity 100.0%; Pred. No. 5e-78;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAPPGHFKDPKRLYCKNGGFLRIHPDGRVDGVRKSDPHIKLQQAER 60
DB 1 palpedgsgaippghfkdpkrllycknggfflrihpdgvdgvrksdphiklqqaer 60
OY 61 GVSISIKGVCANRYLAMKEDGRLLASKCVTDECFEFERLESNNYNTYRSRKYSSWYVALKR 120
DB 61 gvsisikgvcanylamkedgrllaskcvrdecfferlesnnyntyrskyswvalkr 120
OY 121 TGQYKLGPKTGPGRKAILFLPMSAKS 146
DB 121 tgqyklgpktpgpkailflpmsaks 146

RESULT 4

AA87848
ID AAY87848 standard; protein; 146 AA.

AC AAY87848;

DT 01-SEP-2000 (first entry)

DE Bovine FGF-2 protein.

KM FGF-2; fibroblast growth factor; Cardiant; treatment; angiogenesis;
KM coronary artery disease; myocardial infarction injury; bovine.

OS Bos taurus.

PN MO200021548-A2.

PD 20-APR-2000.

PF 13-OCT-1999; 99WO-US22936.

PR 13-OCT-1998; 98US-0104103.

PA (CHIR) CHIRON CORP.

PA (WHIT/) WHITEHOUSE M J.

PI Kavanaugh WM;

DR WPI: 2000-317840/27.

DR N-PSDB; AAA39555.

PT Novel unit dose comprising fibroblast growth factor, its angiogenically
PT active fragment or mutein for inducing cardiac angiogenesis, treating
PT coronary artery disease and reducing post myocardial infarction injury

PS Claim 1; Page 58; 67pp; English.

CC This invention describes a novel unit dose (I), of fibroblast growth
CC factor (FGF) comprising 0.008-6.1 mg of a mammalian FGF comprising
CC sequence of 140 ((II) and (III)) 146 ((IV) and (V)), 205 (VI), 266
CC (VII), 207 ((VIII) and (XI)), 215 (IX), and 208 (X) amino acids (aa),
CC given in the specification, its angiogenically active fragment or
CC mutein. The product of the invention has angiogenic and cardant
CC activity. (I) is used for treating a human patient for coronary artery
CC disease, and inducing angiogenesis in the human heart. (I) further
CC provides an adjunct for reducing post myocardial infarction injury in
CC humans. The unit dose provides the human patient with a rapid and
CC therapeutic cardiac angiogenesis sufficient to obviate surgical

CC intervention and results in an superior increase in the treated
CC patients's exercise tolerance time (ETI). It also provides a safe and
CC therapeutically efficacious treatment for the patients with coronary
CC artery disease that lasts at least 6 months before a further treatment
CC is needed. The method provides superior increase of 1.5-2 minutes in
CC the treated patient's (ETI), compared to an increase of 30 seconds for
CC current modes treatment. This sequence represents the bovine FGF-2
CC protein fragment described in the method of the invention.

SO Sequence 146 AA:

Query Match 100.0%; Score 787; DB 21; Length 146;
Best Local Similarity 100.0%; Pred. No. 5e-78;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAPPGHFKDPKRLYCKNGGFLRIHPDGRVDGVRKSDPHIKLQQAER 60
DB 1 palpedgsgaippghfkdpkrllycknggfflrihpdgvdgvrksdphiklqqaer 60
OY 61 GVSISIKGVCANRYLAMKEDGRLLASKCVTDECFEFERLESNNYNTYRSRKYSSWYVALKR 120
DB 61 gvsisikgvcanylamkedgrllaskcvrdecfferlesnnyntyrskyswvalkr 120
OY 121 TGQYKLGPKTGPGRKAILFLPMSAKS 146
DB 121 tgqyklgpktpgpkailflpmsaks 146

RESULT 5

AA81941
ID AAY81941 standard; protein; 146 AA.

AC AAY81941;

DT 30-JUN-2000 (first entry)

DE Recombinant bovine FGF-2 protein sequence.

KM FGF-2; cow; fibroblast growth factor 2; angiogenesis; unstable angina;
KM coronary artery disease; human; acute myocardial infarction; therapy.

OS Bos taurus.

PN MO200013701-A2.

PD 16-MAR-2000.

PF 27-AUG-1999; 99WO-US19770.

PR 03-SEP-1998; 98US-0145743.

PR 13-OCT-1998; 98US-0104102.

PR 13-OCT-1998; 98US-0104103.

PA (CHIR) CHIRON CORP.

PA (WHIT/) WHITEHOUSE M J.

DR WPI: 2000-256860/22.

DR N-PSDB; AAA07355.

PS Claim 3; Page 58-59; 60pp; English.

CC This sequence represents a recombinant bovine fibroblast growth factor-2
CC (FGF-2) sequence. The invention relates to a unit dose composition
CC (I) for inducing angiogenesis in a human, comprising 0.008-7.2 mg of
CC FGF-2 or an angiogenically active fragment or mutein of FGF-2. The
CC composition (I) and recombinant FGF-2 are useful for treating coronary
CC artery disease or inducing angiogenesis in a human patient. Recombinant
CC FGF-2 may be used to treat unstable angina and acute myocardial

[illegible]

RESULT	6
AAE11973	
ID	AAE11973 standard; Protein; 146 AA

DT 18-DEC-2001 (first entry)

DE Bovine fibroblast growth factor-2 (FGF-2) #1.

KM Bovine: therapy, erectile dysfunction; fibroblast growth factor-2; FGF-2
KM epididymal growth factor; EGF; platelet derived growth factor; PDGF;
KM vascular endothelial growth factor; VEGF; tissue growth factor; TGF;
KM impotence; vasotropic.

OS Bos taurus

PN W0200168125-A2.

PD 20-SEP-2001.

PF 09-MAR-2001; 2001WO-US07702.

PR 10-MAR-2000; 2000US-188480P.

XX

XX

XX

DR N-PSDB; AAD19520.

PT Treating or preventing erectile dysfunction, comprises administering

PT in the penis, groin or leg -

PS Claim 6; Page 31; 35pp; English.

CC The present invention relates to a method for treating or preventing
CC erectile dysfunction, comprising administering a fibroblast growth
CC factor (FGF), epidermal growth factor (EGF), platelet derived growth
CC factor (PDGF), vascular endothelial growth factor (VEGF) or tissue
CC growth factor (TGF). The invention is used to treat or prevent erectile
CC dysfunction, or impotence. The present sequence is a bovine FGF-2
CC protein.

SQ Sequence 146 AA;

Query Match	100.0%;	Score 787;	DB 22;	Length 146;
-------------	---------	------------	--------	-------------

Best Local Similarity 100.0%; Pred. No. 5e-78; Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY	1	PALPDDGGSGAFPPPHFEDPKRLCYKNGGFPLRIHPDGRVDSVREKSDPHIKLOLAEEER	60
Db	1	palpedgsgsgafppghfkdpkrlcyknngfflrlnpdgrvdgvrksdpnlqlgaeeer	60
QY	61	GVSSTKSGCANRYLMMKEDGRLLASKCYWDECFEERLESNNYNTYRSKYSWYVALNR	120
Db	61	gvyslkgyccanrylmmkedgrllaskcvrdeoffeerlesmnyntyrskyswyvalnr	120
QY	121	TGQYRLGPRTPGQKAILFLPMsAKS	146
Db	121	tgyrlgprktgpgkailflpmaks	146

RESULT 7
AAP80613 AAP80613 standard: protein; 147 AA.
XX AAP80613:

RESULT	7
AAP80613	
ID	AAP80613 standard; protein; 147 AA

AC AAP80613;

DT 17-SEP-1990 (first entry)

DE Sequence of manufactured bovine basic fibroblast growth factor

XX
XX

KW phage vector M13mp18.

OS Bovine.

FH	Key	Location/Qualifiers
FM	W400-4:4400000	113

```

FT /note="changed to Thr"
ET 129
Misc-difference 129

```

FT
yy

PN EP275204-A.
yy

PD 20-JUL-1988
XY

PF 14-JAN-1988; 88EP-0300303
XY

PR 03-NOV-1987; 8705-0116430
XX

PA (AMGE-) AMGEN INC.
XX

PI Banks AR, FOX GM,
XX

DR WPI; 1988-199640-29
DR N-PSDB: AAN81236

XX
PT
DNA encoding human h

PT used for expression in an E coli host with non-heparin chromatographic column

Example: Fig 2: 21bp: English.

The published ΔA sequence of bovine basic FGF was used as a basis for the synthesis of mfd. bfgf gene for expression in *E. coli*. The nucleotide sequence of this mfd. gene includes codons most often used by *E. coli* and the inclusion of convenient restriction sites. Oligonucleotides corresponding to both strands of the gene were synthesized in overlapping sections and assembled into 2 larger sections by hybridation and subsequent ligation. The 2 larger sections were then cloned into an appropri. phage vector (M13mp18) for nucleotide sequence analysis. The sections were then ligated into an expression vector and introduced into *E. coli*. Bovine and human basic FGF are known to differ by only two AAs. Site directed mutagenesis was used to convert the bovine gene into one coding for the human FGF (see Fig.). The FGF is a potent mitogen for a wide variety of cells of mesodermal origin and may be chemotactic for endothelial cells and fibroblasts. The basic FGF induces neovascularisation and may be

CC used in accelerating wound healing.
 XX
 SQ Sequence 147 AA;

Query Match 100.0%; Score 787; DB 9; Length 147;
 Best Local Similarity 100.0%; Prec. No. 5e-78;
 Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAPPPGHFKDKPKRLYCKNGGFLLRIHPDGRVDGVREKSDPHIKIQIAEER 60
 |||
 DB 2 PALPEDGSGGATPPGHFKDKPKRLYCKNGGFLLRIHPDGRVDGVREKSDPHIKIQIAEER 61
 OY 61 GYVSIKGVCANRYLAMKEGDRLLASKCVYDECFEERLESNNYNTYRSKYSWYVALKR 120
 |||
 DB 62 GYVSIKGVCANRYLAMKEGDRLLASKCVYDECFEERLESNNYNTYRSKYSWYVALKR 121
 OY 121 TGQYKLGPKTGPQKAILFLPMSAKS 146
 |||
 DB 122 TGQYKLGPKTGPQKAILFLPMSAKS 147

RESULT 8
 AAP90085
 ID AAP90085 standard; Protein; 147 AA.

XX
 AC AAP90085;

XX
 DT 01-NOV-1989 (first entry)

XX
 DE Bovine basic fibroblast growth factor.

XX
 KW Bovine basic fibroblast growth factor; analogues; heal
 wounds; tissue generation.

XX
 OS Bos taurus.

XX
 PN W08904832-A.

XX
 PD 01-JUN-1989.

XX
 PE 22-NOV-1988; 88WO-US04189.

XX
 PR 24-NOV-1987; 87US-0271521.

XX
 PA (AMGE) AMGEN INC.

XX
 PI Arakawa T, Fox GM;

XX
 DR WPI; 1989-178359/24.

XX
 DR N-PSDB; AAN90034.

PT Stable basic fibroblast growth factor analogues
 - used to treat wounds and generate tissue and organs.

XX
 PS Disclosure; fig 2; 67pp; English.

XX
 CC Bovine basic fibroblast growth factor (bFGF), which is
 converted by modified base features to analogues and to human bFGF

CC by site-directed mutagenesis of the DNA encoding it (see AAN90034).

XX
 SQ Sequence 147 AA;

Query Match 100.0%; Score 787; DB 10; Length 147;
 Best Local Similarity 100.0%; Prec. No. 5e-78;
 Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAPPPGHFKDKPKRLYCKNGGFLLRIHPDGRVDGVREKSDPHIKIQIAEER 60
 |||
 DB 2 PALPEDGSGGATPPGHFKDKPKRLYCKNGGFLLRIHPDGRVDGVREKSDPHIKIQIAEER 61
 OY 61 GYVSIKGVCANRYLAMKEGDRLLASKCVYDECFEERLESNNYNTYRSKYSWYVALKR 120

DB 62 GYVSIKGVCANRYLAMKEGDRLLASKCVYDECFEERLESNNYNTYRSKYSWYVALKR 121
 |||
 OY 121 TGQYKLGPKTGPQKAILFLPMSAKS 146
 |||
 DB 122 TGQYKLGPKTGPQKAILFLPMSAKS 147

RESULT 9
 AAP70671
 ID AAP70671 standard; Protein; 155 AA.

XX
 AC AAP70671;

XX
 DT 18-APR-1991 (first entry)

DE Sequence of bovine basic fibroblast growth factor (FGF).

XX
 KW Wound healing; tissue repair; tumour probe.

XX
 OS Bos taurus.

EH Key Location/Qualifiers

FT Peptide 1..9

FT Protein 10..155

PN W08701728-A.

XX
 PD 26-MAR-1987.

XX
 PF 11-SEP-1986; 86WO-US01879.

XX
 PR 30-MAY-1986; 86US-0869382.

XX
 PR 12-SEP-1985; 85US-0775521.

XX
 PR 16-DEC-1985; 85US-0809163.

XX
 PA (BIOT-) BIOTECHN RES PARTNE.

XX
 PI Fiddes JC, Abraham JA;

XX
 DR WPI; 1987-093786/13.

XX
 DR N-PSDB; AAN71024.

XX
 PE New DNA sequences encoding mammalian fibroblast growth factors -

XX
 PR useful in prodn. of pure factors for use in wound healing and

XX
 PT tissue repair and of probe for tumour testing

XX
 PS Claim 11; Fig 3; 89pp; English.

XX
 CC The N-terminal AA sequence of both acidic and basic bovine FGF are

XX
 CC used to construct long probes to screen human and bovine genomic

XX
 CC libraries for FGF genes. Isolated sequences are used in vector

XX
 CC construction etc. and used to transform CV-1 cells for FGF prodn.

XX
 SQ Sequence 155 AA;

Query Match 100.0%; Score 787; DB 8; Length 155;
 Best Local Similarity 100.0%; Prec. No. 5.4e-78;
 Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAPPPGHFKDKPKRLYCKNGGFLLRIHPDGRVDGVREKSDPHIKIQIAEER 60
 |||
 DB 10 PALPEDGSGGATPPGHFKDKPKRLYCKNGGFLLRIHPDGRVDGVREKSDPHIKIQIAEER 69
 OY 61 GYVSIKGVCANRYLAMKEGDRLLASKCVYDECFEERLESNNYNTYRSKYSWYVALKR 120
 |||
 DB 70 GYVSIKGVCANRYLAMKEGDRLLASKCVYDECFEERLESNNYNTYRSKYSWYVALKR 129
 OY 121 TGQYKLGPKTGPQKAILFLPMSAKS 146
 |||
 DB 130 TGQYKLGPKTGPQKAILFLPMSAKS 155

```
RESULT 10
AAM20029
ID AAM20029 standard; Protein: 155 AA.
XX
AC AAM20029;
XX
DT 18-SEP-1997 (first entry)
XX
DE Recombinant bovine basic fibroblast growth factor.
XX
KM FGF; fibroblast growth factor; basic; acidic; wound healing;
KM neurodegenerative disease; Parkinson's; Alzheimer's disease;
KM bone fracture; biologically active; embolism.
XX
OS Bos taurus.
XX
FH Key Location/Qualifiers
FT Peptide 1..9
FT Protein 10..155
FT /label= mat_protein
XX
PM US5604293-A.
XX
PD 18-FEB-1997.
XX
PF 12-SEP-1985; 85US-0775521.
XX
PR 15-MAY-1987; 87US-0050706.
PR 12-SEP-1985; 85US-0775521.
PR 16-DEC-1985; 85US-0809163.
PR 30-MAY-1986; 86US-0869382.
PR 30-MAY-1992; 92US-0860688.
PR 01-APR-1994; 94US-0221462.
XX
PA (SCIO-) SCIOS INC.
XX
PI Abraham JA, Fiddes JC;
XX
DR WPI: 1997-234676/21.
DR N-PSDB; AAT71236.
XX
PT New high purity, recombinant human basic fibroblast growth factor -
PT for promoting wound healing and treating neurodegenerative
PT diseases, suitable for production on large scale
XX
PS Example 5; Fig 3; 34pp; English.
XX
CC AAM20029 is a recombinant bovine basic fibroblast growth factor (bFGF).
CC Recombinant bFGF is used to promote healing of wounds, bone fractures,
CC damaged myocardial tissue etc. and, since it increases neuronal
CC survival and promotes neurite outgrowth, may also be used in treatment
CC of neurological disorders such as Alzheimer's and Parkinson's diseases.
CC bFGF may also be used for detection of specific inhibitors; for
CC treatment of cell cultures in vitro before transplant and for inducing
CC release of tissue plasminogen activator or collagenase, e.g. for
CC treatment of a chronic tendency to form embolism. Recombinant bFGF can
CC be produced on a large scale.
XX
SQ Sequence 155 AA;
Query Match 100.0%; Score 787; DB 18; Length 155;
Best Local Similarity 100.0%; Pred. No. 5.4e-78;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 PALPDEGGGAGFPFGHFKPKRKYCKNGGFRLIHPDGRVDGVRKSDPHIKIQIAEER 60
DB 10 palpedggsaifppghfkpkrlkycknggfflirihpdgrvdyreksdphiklqiaeer 69
QY 61 GVSISGVCANRYLAMKEDGRLLASKCVTDECFERLESNNYNTSRKYSWYVALKR 120
DB 61 GVSISGVCANRYLAMKEDGRLLASKCVTDECFERLESNNYNTSRKYSWYVALKR 120
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DB 70 gvsikgycanrylamkedgrllaskcvtdceffierlesnnyntzrskyswyvalkr 129
QY 121 TGQYKLGPRTPGGQKAILFLPMSAKS 146
DB 130 tgqyklgprktgpgkailflpmsaks 155
RESULT 11
AAE11975
ID AAE11975 standard; Protein: 155 AA.
XX
AC AAE11975;
XX
DT 18-DEC-2001 (first entry)
XX
DE Bovine fibroblast growth factor-2 (FGF-2) #2.
XX
KM Bovine; therapy; erectile dysfunction; fibroblast growth factor-2; FGF-2;
KM epidermal growth factor; EGF; platelet derived growth factor; PDGF;
KM vascular endothelial growth factor; VEGF; tissue growth factor; TGF;
KM Impotence; vasotropic.
XX
OS Bos taurus.
XX
PM WO200168125-A2.
XX
PD 20-SEP-2001.
XX
PF 09-MAR-2001; 2001WO-US07702.
XX
PR 10-MAR-2000; 2000US-188480P.
PR 11-MAY-2000; 2000US-203415P.
XX
PA (CHIR ) CHIRON CORP.
XX
PI Whitehouse MJ;
XX
DR WPI: 2001-616273/71.
DR N-PSDB; AAD19522.
XX
PT Treating or preventing erectile dysfunction, comprises administering
PT growth factor, particularly fibroblast growth factor to blood vessels
PT in the penis, groin or leg
XX
PS Claim 6; Page 33; 35pp; English.
XX
CC The present invention relates to a method for treating or preventing
CC erectile dysfunction, comprising administering a fibroblast growth
CC factor (FGF), epidermal growth factor (EGF), platelet derived growth
CC factor (PDGF), vascular endothelial growth factor (VEGF) or tissue
CC growth factor (TGF). The invention is used to treat or prevent erectile
CC dysfunction, or impotence. The present sequence is a bovine FGF-2
CC protein.
XX
SQ Sequence 155 AA;
Query Match 100.0%; Score 787; DB 22; Length 155;
Best Local Similarity 100.0%; Pred. No. 5.4e-78;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 PALPDEGGGAGFPFGHFKPKRKYCKNGGFRLIHPDGRVDGVRKSDPHIKIQIAEER 60
DB 10 palpedggsaifppghfkpkrlkycknggfflirihpdgrvdyreksdphiklqiaeer 69
QY 61 GVSISGVCANRYLAMKEDGRLLASKCVTDECFERLESNNYNTSRKYSWYVALKR 120
DB 70 gvsikgycanrylamkedgrllaskcvtdceffierlesnnyntzrskyswyvalkr 129
QY 121 TGQYKLGPRTPGGQKAILFLPMSAKS 146
DB 130 tgqyklgprktgpgkailflpmsaks 155
```

```
RESULT 12
AAB49978
ID AAB49978 standard; peptide: 273 AA.
XX
AC AAB49978;
XX
DT 08-MAR-2001 (first entry)
XX
DE 3-D structure determining method protein #7.
XX
KW Macromolecule: 3-dimensional structure; protein conformation; proteomics.
XX
OS Unidentified.
XX
PN WO200072004-A2.
XX
PD 30-NOV-2000.
XX
PF 26-MAY-2000; 2000WO-US14667.
XX
PR 26-MAY-1999; 99US-0135891.
XX
PA (REGC ) UNIV CALIFORNIA.
XX
PI Gibson BW, Kuntz ID, Tang N, Dollinger G, Oshiro CM, Hempel JC;
PI Taylor E;
XX
DR WPI: 2001-049881/06.
XX
PT Determining three dimensional structure of polypeptide or nucleic acid
PT molecules, by use of an integrated technique of determining physical
PT distance constraints and analysis of constraint information -
XX
ES Example 2; Fig 20; 80pp; English.
XX
CC The present invention describes a novel method for determining the
CC 3-dimensional structure of a macromolecule, particularly a protein. The
CC method involves generating intramolecular crosslinks of known length
CC between the residues of the protein, separating those proteins containing
CC intramolecular bonds, exposing these to a protease so that peptide
CC fragments are produced, identifying these fragments so that their
CC position within the protein is known, and interpreting the data to
CC determine the protein structure. This method can be used in the study of
CC proteomic and genomic information.
XX
SQ Sequence 273 AA;

Query Match 100.0%; Score 787; DB 22; Length 273;
Best Local Similarity 100.0%; Pred. No. 1.1e-77;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAAPPGHFDPKRLYCKNGGFLRIHPDGRVGVREKSDPHIKLQQAER 60
DB 1 palpedgsgaappghfdpkrlycknggflrhpdgdrvgrvksdphiklqqaer 60
OY 61 GVVSIRKGYCANRYLAMKEGRLASKCVTDECFPERLESNNYNTYRSRKYSSWYVALKR 120
DB 61 gvvsirkgycanrylamkedgrlaskcvldecffierlesnnyntyrskyswvalkr 120
OY 121 TGOYKLGPKTGPQKAILFLPMASAKS 146
DB 121 tqgylgpktpgqkailflpmsaks 146

RESULT 13
AAP82579
ID AAP82579 standard; protein: 146 AA.
XX
AC AAP82579;
XX
DT 02-NOV-1990 (first entry)
XX
```

```
XX
DE Human basic fibroblast growth factor.
XX
KW Basic fibroblast growth factor; anticancer agent; bFGF.
XX
OS Homo sapiens.
XX
EP288687-A.
XX
PD 02-NOV-1988.
XX
PF 01-MAR-1988; 88EP-0103047.
XX
PR 03-MAR-1987; 87JP-0049759.
PR 26-AUG-1987; 87JP-0211599.
PR 26-JAN-1988; 88JP-0016260.
XX
PA (TAKE ) TAKEDA CHEMICAL IND KK.
XX
PI Iwane M, Kurokawa T, Igarashi K;
XX
DR WPI: 1988-308739/44.
DR N-PSDB; AAN82192.
XX
PT New monoclonal antibodies specific for basic fibroblast growth
PT factor - used in immunoassay, purification, and as anticancer agent.
XX
PS Disclosure: ; p; English.
XX
CC DNA encoding the protein was isolated from a cDNA library prepd.
CC from mRNA from human foreskin derived primary culture cell. It
CC can be used to produce recombinant hbFGF for prodn. of MAb's
CC specific for bFGF (do not cross react with acidic FGF). High
CC purity bFGF is also useful for promoting healing of burns and
CC wounds and, due to its neovascularising action, to treat thrombosis
CC and arteriosclerosis.
CC See also AAN82193 and AAN82194.
XX
SQ Sequence 146 AA;

Query Match 98.6%; Score 776; DB 9; Length 146;
Best Local Similarity 98.6%; Pred. No. 7.9e-77;
Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 1 PALPEDGSGAAPPGHFDPKRLYCKNGGFLRIHPDGRVGVREKSDPHIKLQQAER 60
DB 1 palpedgsgaappghfdpkrlycknggflrhpdgdrvgrvksdphiklqqaer 60
OY 61 GVVSIRKGYCANRYLAMKEGRLASKCVTDECFPERLESNNYNTYRSRKYSSWYVALKR 120
DB 61 gvvsirkgycanrylamkedgrlaskcvldecffierlesnnyntyrskyswvalkr 120
OY 121 TGOYKLGPKTGPQKAILFLPMASAKS 146
DB 121 tqgylgsktpgqkailflpmsaks 146

RESULT 14
AAR25423
ID AAR25423 standard; protein: 146 AA.
XX
AC AAR25423;
XX
DT 06-JAN-1993 (first entry)
XX
DE bFGF derivative.
XX
KW Human; basic fibroblast growth factor; recombinant; wound healing;
KW revascularise; regenerate; neural tissue;.
XX
OS Homo sapiens.
XX
```

FN	Key	Location/Qualifiers
FT	Modified-site	69
FT	Modified-site	/note="derivatised with an agent capable of forming a covalent S-C bond with Cys"
FT	Modified-site	89
FT	Modified-site	/note="derivatised with an agent capable of forming a covalent S-C bond with Cys"
PN	EP494664-A.	
XX		
PD	15-JUL-1992.	
XX		
PE	09-JAN-1992;	92EP-0100257.
XX		
PR	09-JAN-1991;	91GB-0000381.
XX		
PA	(FARM) FARMITALIA ERBA SRL CARLO.	
XX		
PI	Bertolero F, Caccia P, Cauet G, Mittl G;	
XX		
DR	WPI: 1992-235730/29.	
XX		
PT	Derived basic fibroblast growth factor - for treating ulcers,	
PT	regenerating damaged neural tissue, aiding tissue transplant or	
PT	bone graft and revascularising ischaemic tissue	
XX		
PS	Claim 2; Page 3; 20pp; English.	
XX		
CC	The sequence is that of a recombinant human basic fibroblast growth	
CC	factor which has at least one of the four cysteine residues (pref.	
CC	Cys 69 and Cys 87) derivatised with an agent able to form a covalent	
CC	S-C bond with Cys. Typical agents include iodoacetic acid,	
CC	haloacetamide, alkali tetrathionates, alkyl methanethiosulphonates	
CC	and 1-6C alkylsulphones. The derivatised bFGF is used to accelerate	
CC	the healing of wounds (including burns, ulcers, transplants, and	
CC	bone grafts), to revascularise ischaemic tissue or to regenerate	
CC	damaged neural tissue. Compared with native bFGF the recombinant	
CC	derivatised bFGF has better biological activity and stability (esp.	
CC	not aggregating by dimer formation) and is also easier to isolate.	
XX		
XX	Sequence 146 AA;	

Query Match	98.6%	Score 776	DB 13	Length 146
Best Local Similarity	98.6%	Pred. No. 7.9e-77		
Matches 144	Conservative	1	Mismatches	1
			Indels	0
			Gaps	0

1 PALPEDGSGAPPGGHEFDKPKRLCYCKNGGFLFIHPDDCVDDVREKSPSHIKIQLQAEER 60
 1 PALPEDGSGAFPPGHEFDKPKRLCYCKNGGFLFIHPDDCVDDVREKSPSHIKIQLQAEER 60
 1 PALPEDGSGAFPPGHEFDKPKRLCYCKNGGFLFIHPDDCVDDVREKSPSHIKIQLQAEER 60
 1 PALPEDGSGAFPPGHEFDKPKRLCYCKNGGFLFIHPDDCVDDVREKSPSHIKIQLQAEER 60

Oy	61	GVSISIKGCANRLAMKEDGRLLASCKATDECEFFERLESNNNTYRSRKYSSSWVALKR	120
Db	61	gyvsikgcycanrylamkedgrllaskcvtdecfferlesnmnyltyrskytswvalkr	120

Db		
121	tggykxlgsktgpqkallflpmsaks	146
0Y	121 TGGYKLGSKPTGPGKALLFLPMSAKS	146
0Y	121 TGGYKLGSKPTGPGKALLFLPMSAKS	146

RESULT	15
AAV87847	
TD	2AV87847 standard. protein. 146 AA

AA	AA
AC	AA
XX	AA
DT	01-SEP-2000 (first entry)

aa Human FGF-2 protein.
de
xx FGF-2: fibroblast growth factor: cardiant: andjoenesis:
kv
ww

[illegible]

OS	Homo sapiens.
XX	
PN	WO200021548-A2.
XX	
PD	20-APR-2000.
XX	
PE	13-OCT-1999; 99WO-US22936.
XX	
PR	13-OCT-1998; 98US-0104103.
XX	
PA	(CHIR) CHIRON CORP.
PA	(WHIT/) WHITEHOUSE M J.
XX	
PI	Kavanaugh WM;
XX	
DR	WPI; 2000-317840/27.
XX	
PT	Novel unit dose comprising fibroblast growth factor, its angiogenically
PT	active fragment or mutein for inducing cardiac angiogenesis, treating
PT	coronary artery disease and reducing post myocardial infarction injury

PS Claim 1; Page 56-57; 67pp; English.

This invention describes a novel unit dose (I), of fibroblast growth factor (FGF) comprising 0.008-6.1 mg of a mammalian FGF comprising sequence of 140 ((II) and (IIII)), 146 ((IV) and (V)), 205 (VI), 266 ((VII), 207 ((VIII) and (XI)), 215 (XII), and 208 (X) amino acids (aa), or given in the specification, its antigenically active fragment or methyl. The product of the invention has angiogenic and cardiant activity. (I) is used for treating a human patient for coronary artery disease, and inducing angiogenesis in the human heart. (I) further provides an adjunct for reducing post myocardial infarction injury in humans. The unit dose provides the human patient with a rapid and therapeutic cardiac angiogenesis sufficient to obviate surgical intervention and results in an superior increase in the treated patients's exercise tolerance time (ETT). It also provides a safe and therapeutically efficacious treatment for the patients with coronary artery disease that lasts at least 6 months before a further treatment is needed. The method provides superior increase of 1.5-2 minutes in the treated patient's (ETT), compared to an increase of 30 seconds for current modes treatment. This sequence represents the human FGF-2 protein fragment described in the method of the invention.

SQ Sequence 146 AA;

Query Match	98.6%;	Score 776;	DB 21;	Length 146;
Best Local Similarity	98.6%;	Pred. No. 7.9e-77;		
Matches 144;	Conservative	1;	Mismatches	1;
			Indels	0;
			Gaps	0;

Db 1 PALPDEGGSGATPPGHRKDPKLYLCNNGGFEIRLHPDGRVBDVREKSDPFLKQLQLEER 60
1 PALPDEGGSGATPPGHRKDPKLYLCNNGGFEIRLHPDGRVBDVREKSDPFLKQLQLEER 60

61 gvsivsgvcanmlamkedgrllaskcvtdceffferlesnynntysrkyxswyvalkr 120

Db	121	146
121	tggykxsgsktqpgqkailfflpsaks	146

Search completed: June 7, 2002, 14:35:39
Job time: 276 sec

Job time: 276 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:33:13 ; Search time 47.03 Seconds
(without alignments)
298.300 Million cell updates/sec

Title: US-09-802-365-2

Sequence: 1 PALPEDGSGGAFPPGHFKDP.....GPKTPGQKALFLPMASAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283138 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :
1: PIR_71:*
2: PIR1:*
3: PIR3:*
4: PIR4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	787	100.0	157	1 GKB0B	basic fibroblast g
2	781	99.2	146	1 S00185	basic fibroblast g
3	776	98.6	210	1 A3239E	basic fibroblast g
4	759.5	96.5	154	2 A31674	basic fibroblast g
5	754.5	95.9	154	2 C37360	basic fibroblast g
6	736	93.5	137	2 I46711	fibroblast growth
7	734	93.3	189	2 A48834	basic fibroblast g
8	717.5	91.2	164	2 S31622	basic fibroblast g
9	644	81.6	155	1 A40117	basic fibroblast g
10	425.5	54.1	125	1 A32484	basic fibroblast g
11	405	51.5	155	1 A60721	acidic fibroblast
12	395	50.2	155	1 A33665	acidic fibroblast
13	392.5	49.9	155	2 A60130	acidic fibroblast
14	391	49.7	155	2 S04147	acidic fibroblast
15	391	49.7	155	2 D37360	acidic fibroblast
16	389	49.4	152	2 JH0476	acidic fibroblast
17	387	49.2	153	2 JH0055	acidic fibroblast
18	384	48.8	155	1 GKB0A	acidic fibroblast
19	252	32.0	194	1 S0710	fibroblast growth
20	251.5	32.0	256	2 J04627	fibroblast growth
21	249.5	31.7	264	2 A36207	fibroblast growth
22	249.5	31.7	266	2 S68144	fibroblast growth
23	246	31.3	220	2 I50388	fibroblast growth
24	245.5	31.2	206	1 TV0H8S	fibroblast growth
25	245	31.1	208	1 S20102	fibroblast growth
26	245	31.1	208	1 S14192	fibroblast growth
27	242.5	30.8	267	1 J04268	fibroblast growth
28	241	30.6	267	1 TVH08S	fibroblast growth
29	236	30.0	187	2 S23593	embryonic fibrobla

30	235.5	29.9	237	1 S39582	transforming prote
31	235	29.9	245	1 TVMSR2	transforming prote
32	234	29.7	239	1 S04742	fibroblast growth
33	232.5	29.5	202	1 TVMSHS	fibroblast growth
34	231.5	29.4	192	2 S54407	embryonic fibrobla
35	215	27.3	208	2 S66486	fibroblast growth
36	209	26.6	211	2 J07353	fibroblast growth
37	209	26.6	208	2 J07082	fibroblast growth
38	207	26.2	208	2 J07082	fibroblast growth
39	206.5	26.2	207	2 J05940	fibroblast growth
40	205.5	26.1	207	2 J05941	fibroblast growth
41	204.5	26.0	194	2 I48610	keratinocyte growt
42	203	25.8	212	2 J07511	fibroblast growth
43	202.5	25.7	194	1 A36301	fibroblast growth
44	202.5	25.7	194	2 S26049	fibroblast growth
45	202.5	25.7	194	2 S49501	keratinocyte growt

ALIGNMENTS

RESULT 1

GKB0B
basic fibroblast growth factor precursor - bovine (fragment)
N:Alternate names: bFGF; kidney-derived growth factor; prostatiopin
C:Species: Bos primigenius taurus (cattle)
C:Date: 13-Aug-1986 #sequence.revision 02-Jun-1995 #text.change 24-Nov-1999
C:Accession: A24663; A32878; A33784; A61550; A61551; A60310; A61094; A01366; A60316;
R:Abraham, J.A.; Mergia, A.; Whang, J.L.; Tumbolo, A.; Friedman, J.; Hjertild, K.A.; G
Science 233, 545-548, 1986
A:Title: Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic
A:Reference number: A94290; MUID:86261806
A:Accession: A24663
A:Molecule type: mRNA
A:Residues: 3-157 <ABR>
A:Cross-references: GB:M13440; NID:g163049; PIDN:AAA30518.1; PID:g163050
A:Experimental source: Pituitary gland
R:Abraham, J.A.; Whang, J.L.; Tumbolo, A.; Mergia, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organizat
A:Reference number: A90924; MUID:87217066
A:Accession: A32878
A:Molecule type: mRNA
A:Residues: 3-157 <ABR2>
R:Miller, P.G.; Li, Y.S.; Hoffman, R.M.; Kodner, C.M.; Siegel, N.R.; Denel, T.F.
Biochem. Biophys. Res. Commun. 165, 1096-1103, 1989
A:Title: A novel 17 KD heparin-binding growth factor (HBGF-8) in bovine uterus: purif
A:Reference number: A33784; MUID:90121211
A:Accession: A33784
A:Molecule type: protein
A:Residues: 1-14 <MIT>
A:Note: demonstration of a possible alternative initiator or splice junction
R:Berthelin, J.; Hearn, M.T.W.
Mol. Cell. Endocrinol. 51, 187-199, 1987
A:Title: Isolation, characterization and tissue localisation of an N-terminal-truncat
A:Reference number: A61550; MUID:87247652
A:Accession: A61550
A:Molecule type: protein
A:Residues: 16-35 <BER>
R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
Mol. Cell. Endocrinol. 49, 189-194, 1987
A:Title: Isolation and partial characterization of basic fibroblast growth factor fro
A:Reference number: A61551; MUID:87162856
A:Accession: A61551
A:Molecule type: protein
A:Residues: 27-35, 'X', 37-41 <UB3>
A:Experimental source: testes
A:Note: this form appears to be identical to the renal form
R:Ueno, N.; Baird, A.; Esch, F.; Shimasaki, S.; Ling, N.; Guillemin, R.
Regul. Pept. 16, 135-145, 1986
A:Title: Purification and partial characterization of a mitogenic factor from bovine
A:Reference number: A60310; MUID:87119165
A:Accession: A60310

```

A:Residues: 23-35, 'X', 37-42 <UEN>
A:Experimental source: liver
R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
Biochem. Biophys. Res. Commun. 138, 580-588, 1986
A:Title: Isolation of an amino terminal extended form of basic fibroblast growth factor.
A:Reference number: A24819; MUID:86295737
A:Contents: annotation
A:Note: the amino end of this form was blocked; the peptide composition matched what was
R:Gospodarowicz, D.; Baird, A.; Cheng, J.; Lui, G.M.; Esch, F.; Bohlen, P.
Endocrinology 118, 82-90, 1986
A:Title: Isolation of fibroblast growth factor from bovine adrenal gland: physicochemical
A:Reference number: A61094; MUID:86081530
A:Accession: A61094
A:Molecule type: protein
A:Residues: 12-25, 27-35, 'X', 37-40 <GOS>
R:Experimental source: adrenal gland
R:Esch, F.; Baird, A.; Ling, N.; Ueno, N.; Hill, F.; Denoroy, L.; Klepper, R.; Gospodarowicz, D.
Proc. Natl. Acad. Sci. U.S.A. 82, 6507-6511, 1985
A:Title: Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and
A:Reference number: A01386; MUID:86016731
A:Accession: A01386
A:Molecule type: protein
A:Residues: 12-157 <ESC>
A:Experimental source: pituitary gland
R:Baird, A.; Esch, F.; Bohlen, P.; Ling, N.; Gospodarowicz, D.
Regul. Pept. 12, 201-213, 1985
A:Title: Isolation and partial characterization of an endothelial cell growth factor from
A:Reference number: A60316; MUID:86095426
A:Accession: A60316
A:Molecule type: protein
A:Residues: 27-35, 'X', 37-43 <BAI>
A:Experimental source: kidney
R:Bohlen, P.; Baird, A.; Esch, F.; Ling, N.; Gospodarowicz, D.
Proc. Natl. Acad. Sci. U.S.A. 81, 5364-5368, 1984
A:Title: Isolation and partial molecular characterization of pituitary fibroblast growth
A:Reference number: A22054; MUID:84298139
A:Accession: A22054
A:Molecule type: protein
A:Residues: 12-26 <BOH>
C:Comment: The acidic and basic fibroblast growth factors are the major endothelial-cell
cell types in vitro (although bFGF is 30-100 times more potent than aFGF in stimulating t
C:Comment: This protein binds heparin more strongly than does aFGF.
C:Superfamily: fibroblast growth factor
C:Keywords: alternative splicing; angiogenesis; blocked amino end; growth factor; heparin
F:1-157/Product: basic fibroblast growth factor, uterine form #status predicted <MAT>
F:1-157/Product: basic fibroblast growth factor, pituitary gamma form #status experiment
F:1-157/Product: basic fibroblast growth factor, pituitary alpha form #status experiment
F:16-157/Product: basic fibroblast growth factor, pituitary short form #status predicted
F:23-157/Product: basic fibroblast growth factor, hepatic form #status predicted
F:27-157/Product: basic fibroblast growth factor, renal form #status experimental <MAT>
F:29-33, 118-121/Region: heparin binding #status predicted
F:4/Modified site: blocked amino end (Ala) (in mature form pituitary gamma) (probably ad

```

500185 basic fibroblast growth factor - sheep
N:Alternate names: prostatiotropin
C:Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
A:Accession: 500185
R:Stimpson, R.J.; Moritz, R.L.; Lloyd, C.J.; Fabri, L.J.; Nice, E.C.; Rubira, M.R.; Bu
FEBS Lett. 224, 128-132, 1987
A:Title: Primary structure of ovine pituitary basic fibroblast growth factor.
A:Reference number: 500185; MUID:88055577
A:Accession: 500185
A:Molecule type: protein
A:Residues: 1-146 <SIM>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding; mitogen
F:18-22/Region: heparin binding #status predicted
F:107-110/Region: heparin binding #status predicted

Query Match 99.2%; Score 781; DB 1; Length 146;
Best Local Similarity 99.3%; Pred. No. 1.3e-70;
Matches 145; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 PALPEDGGSGAFPPEHEDKPKRLCYCKNGFFLRHPDGRDVGVEKSDPHIKQLQAEER 60
DB 1 PALPEDGGSSAFPPEHEDKPKRLCYCKNGFFLRHPDGRDVGVEKSDPHIKQLQAEER 60
QY 61 GVSSTKGVCAARRYLAMKEDGRLLASKCYTDCFFPERLESNNYTYRSRRYSMTVALKR 120
DB 61 GVSSTKGVCAARRYLAMKEDGRLLASKCYTDCFFPERLESNNYTYRSRRYSMTVALKR 120
QY 121 TGOYKLGPRTGPGOKAILEFLPMSAKS 146
DB 121 TGOYKLGPRTGPGOKAILEFLPMSAKS 146

RESULT 3
A32398
basic fibroblast growth factor precursor, 22.5K form - human
N:Alternate names: bFGF; fibroblast growth factor 2; prostatic growth factor; prostat
N:Contains: basic fibroblast growth factor, 18k form
C:Species: Homo sapiens (man)
C:Date: 31-Jul-1988 #sequence_revision 31-Dec-1993 #text_change 21-Jul-2000
C:Accession: A32398; A61537; A26642; B32878; S00297; A54316; B54316; A33624; A25824;
R:Perts, H.; Keshbed, M.; Perts, A.C.; Klagesbrun, M.; Lellias, J.M.; Liauzun, P.; Chalo
Proc. Natl. Acad. Sci. U.S.A. 86, 1835-1840, 1989
A:Title: High molecular mass forms of basic fibroblast growth factor are initiated by
A:Reference number: A32398; MUID:89184522
A:Accession: A32398
A:Molecule type: mRNA
A:Residues: 1-210 <PRA>
A:Cross-references: GB:J04513; NID:g183083; PIDN:AAA52531.1; PID:g459811
R:Shibata, F.; Baird, A.; Florkiewicz, R.Z.
Growth Factors 4, 277-287, 1991
A:Title: Functional characterization of the human basic fibroblast growth factor gene
A:Reference number: A61537; MUID:92110035
A:Accession: A61537
A:Molecule type: DNA
A:Residues: 1-114 <SHI>
A:Note: authors translated the codon GGA for residue 47 as Ala
R:Kurokawa, T.; Sasada, R.; Iwane, M.; Igarashi, K.
FEBS Lett. 213, 189-194, 1987
A:Title: Cloning and expression of cDNA encoding human basic fibroblast growth factor
A:Reference number: A26642; MUID:87162468
A:Accession: A26642
A:Molecule type: mRNA
A:Residues: 56-210 <KRA>
A:Cross-references: GB:M27968; NID:g182562; PIDN:AAA52448.1; PID:g182563
R:Abraham, J.A.; Whang, J.L.; Tsimio, A.; Megia, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organization
A:Reference number: A90924; MUID:87217066
A:Accession: B32878

A:Molecule type: mRNA
 A:Residues: 56-210 <ABR>
 A>Note: the authors translated the codon GAA for residue 108 as Gly
 R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Mergia, A.; Friedman, J.; Gospodarowicz, D.; FEMBO J. 5, 2523-2528, 1986
 A>Title: Human basic fibroblast growth factor: nucleotide sequence and genomic organization
 A:Reference number: S00297; MUID:87053817
 A:Accession: S00297
 A:Molecule type: DNA
 A>Status: not compared with conceptual translation
 A:Residues: 1-155 <AB2>
 A>Note: the authors translated the codon GAA for residue 108 as Gly
 R:Shimoyama, Y.; Gotch, M.; Ino, Y.; Sakamoto, M.; Kato, K.; Hirohashi, S. Jpn. J. Cancer Res. 82, 1263-1270, 1991
 A>Title: Characterization of high-molecular-mass forms of basic fibroblast growth factor rchogenesis.
 A:Reference number: A54316; MUID:92091228
 A:Accession: A54316
 A:Molecule type: protein
 A:Residues: 'XX', 86-88, 'X', 90-91, 'X', 93-95 <SH3>
 A>Note: sequence extracted from C-121 hepatocellular carcinoma cell line
 A:Experimental source: C-121 hepatocellular carcinoma cell line
 A:Accession: B54316
 A:Molecule type: protein
 A:Residues: 'XXX', 19, 'X', 21-29 <SH2>
 A>Note: sequence extracted from NCBI backbone (NCBI:71594)
 R:Feige, J.J.; Bradley, J.D.; Fryburg, K.; Farris, J.; Cousens, L.C.; Barr, P.J.; Baird, J. Cell Biol. 109, 3105-3114, 1989
 A>Title: Differential effects of heparin, fibronectin, and laminin on the phosphorylation
 A:Reference number: A33624; MUID:90078343
 A:Accession: A33624
 A>Status: preliminary
 A:Molecule type: protein
 A:Residues: 57-210 <FEI>
 R:Story, M.T.; Esch, F.; Shimasaki, S.; Sasse, J.; Jacobs, S.C.; Lawson, R.K. Biochem. Biophys. Res. Commun. 142, 702-709, 1987
 A>Title: Amino-terminal sequence of a 16kDa form of basic fibroblast growth factor isolet
 A:Reference number: A25824; MUID:87156686
 A:Accession: A25824
 A:Molecule type: protein
 A:Residues: 57-77 <STO>
 A:Experimental source: prostate
 R:Gimenez-Gallego, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A. Biochem. Biophys. Res. Commun. 135, 541-548, 1986
 A>Title: Human brain-derived acidic and basic fibroblast growth factors: amino terminal
 A:Reference number: A90122; MUID:86186784
 A:Accession: B24243
 A:Molecule type: protein
 A:Residues: 65-102, 'X', 104-105 <GIM>
 A:Experimental source: brain
 R:Gautschi, P.; Frazer-Schroder, M.; Bohlen, P. FEBS Lett. 204, 203-207, 1986
 A>Title: Partial molecular characterization of endothelial cell mitogens from human brain
 A:Reference number: A91364; MUID:86275260
 A:Accession: B24301
 A:Molecule type: protein
 A:Residues: 65-88, 'X', 90-98, 'X', 100 <GAD>
 R:Sommer, A.; Brewer, M.T.; Thompson, R.C.; Moscatelli, D.; Presta, M.; Rifkin, D.B. Biochem. Biophys. Res. Commun. 144, 543-550, 1987
 A>Title: A form of human basic fibroblast growth factor with an extended amino terminus.
 A:Reference number: S42242; MUID:87273238
 A:Accession: S42242
 A>Status: preliminary
 A:Molecule type: mRNA
 A:Residues: 54-210 <SOM>
 A:Cross-references: EMBL:M17599; NID:9183086; PIDN:AAA52534.1; PID:9183087
 R:Patoliano, M.W.; Horlick, R.A.; Spinger, B.A.; Van Dyk, D.E.; Tobery, T.; Wetmore, D. Biochem. Biophys. Res. Commun. 1994
 A>Title: Multivalent ligand-receptor binding interactions in the fibroblast growth factor
 A:Reference number: A55784; MUID:94347757
 A:Accession: B55784
 A:Molecule type: protein
 A:Residues: 54-71 <PAN>

R:Watson, R.; Anthony, F.; Pickett, M.; Lambden, P.; Masson, G.M.; Thomas, E.J. Biochem. Biophys. Res. Commun. 187, 1227-1231, 1992
 A>Title: Reverse transcription with nested polymerase chain reaction shows expression
 A:Reference number: I52267; MUID:93038590
 A:Accession: I52267
 A>Status: preliminary; translated from GB/EMBL/DBJ
 A:Molecule type: mRNA
 A:Residues: 95-182 <RDS>
 A:Cross-references: GB:S47380; NID:9256535; PIDN:AA013853.1; PID:94261553
 A:Experimental source: granulosa cells
 R:Patry, V.; Bugler, B.; Amalric, F.; Prome, J.C.; Prats, H. FEBS Lett. 349, 23-28, 1994
 A>Title: Purification and characterization of the 210-amino acid recombinant basic fl
 A:Reference number: S46253; MUID:94320639
 A:Accession: S46253
 A:Molecule type: protein
 A:Residues: 39-53; 65-88 <PAT>
 A>Note: recombinant gene expressed in Escherichia coli
 A:Gene: GDB:FGF2; FGFR
 A:Cross-references: GDB:119910; OMIM:134920
 A:Map position: 4q25-q27
 A:Start codon: CTG
 C:Superfamily: fibroblast growth factor
 C:Keywords: alternative initiators; angiogenesis; growth factor; heparin binding; mlt
 F:1-210/Product: basic fibroblast growth factor, 22.5k form #status predicted <MA2>
 F:65-210/Product: basic fibroblast growth factor, 18k form #status predicted <MA2>
 F:87-86/Region: heparin binding #status predicted
 F:171-174/Region: heparin binding #status predicted

Query Match 98.6%; Score 776; DB 2; Length 210;
 Best Local Similarity 98.6%; Pred. No. 6e-70;
 Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;
 Oy 1 PALPDGSGGAPPPGHFDPKRLYCKNGGFLRHPDGRVDGVRKSDPHIKLQAEER 60
 Db 65 PALPDGSGGAPPPGHFDPKRLYCKNGGFLRHPDGRVDGVRKSDPHIKLQAEER 124
 Oy 61 GVSSTKGCANRYLAMKEGRLLASCVTDCEFFERESNNYRKRYSWYALKR 120
 Db 125 GVSSTKGCANRYLAMKEGRLLASCVTDCEFFERESNNYRKRYSWYALKR 184
 Oy 121 TGOYKLGPTGPGKALFLPMSAKS 146
 Db 185 TGOYKLGSKTGPCKALFLPMSAKS 210
 RESULT 4
 A31674
 Basic fibroblast growth factor precursor - rat
 N:Alternate names: bFGF
 C:Species: Rattus norvegicus (Norway rat)
 C:Date: 21-May-1990 #sequence_revision 21-May-1990 #text_change 16-Jul-1999
 C:Accession: A31674; S00876; S24309
 R:Shimasaki, S.; Emoto, N.; Koba, A.; Mercado, M.; Shibata, F.; Cooksey, K.; Baird, A. Biochem. Biophys. Res. Commun. 157, 256-263, 1988
 A>Title: Complementary DNA cloning and sequencing of rat ovarian basic fibroblast gro
 A:Reference number: A31674; MUID:86061721
 A:Accession: A31674
 A:Molecule type: mRNA
 A:Residues: 1-154 <SH1>
 A:Cross-references: GB:M22427; NID:9204285; PIDN:AAA41210.1; PID:9204286
 R:Kurokawa, T.; Seno, M.; Igarashi, K. Nucleic Acids Res. 16, 5201, 1988
 A>Title: Nucleotide sequence of rat basic fibroblast growth factor cDNA.
 A:Reference number: S00876; MUID:88262516
 A:Accession: S00876
 A:Molecule type: mRNA
 A:Residues: 1-154 <KUP>
 A:Cross-references: EMBL:X07285; NID:956203; PIDN:CAA30265.1; PID:956204
 R:El-Husseini, A.E.D.; Paterson, J.A.; Myal, Y.; Shiu, R.P.C.

RESULT 8
S31622
basic fibroblast growth factor - short-tailed opossum (*Monodelphis domestica*) (fragment)
C:Species: *Monodelphis domestica*
C:Date: 20-Feb-1995 #sequence_revision 20-Feb-1995 #text_change 12-Apr-1995
C:Accession: S31622
R:Kusewilt, D.F.; Sabourin, C.L.K.; Budge, C.L.; Ley, R.D.
submitted to the EMBL Data Library, September 1992
A:Description: Characterization of cDNA encoding basic fibroblast growth factor of the m
A:Reference number: S31622
A:Accession: S31622
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-164 <KUS>
A:Cross-references: EMBL:Z15154
C:Superfamily: fibroblast growth factor

Query Match	91.2%;	Score: 717.5;	DB 2;	Length 164;
Best Local Similarity	92.5%;	Pred. No. 3.1e-64;		
Matches 136; Conservative	4;	Mismatches 6;	Indels 1;	Gaps 1;

QY	1	PALPDD-GGSSAFPFGHHKDKRKLTYCKNKGFFLAIHPDGRVDYGRKSDPHIKLOIAEE	59
Db	18	PALSDGGGGGAFPFGHFKDKRKLTYCKNKGFFLIIHPDGRVDICIREKSDENIKILOIAEE	77
QY	60	RGVASIKGVCANRYIAMEDEGLLASKVYVDECFEFLBSNNYNTYRSKRYSSWYALK	119
Db	78	RGVASIKGVCANRYIAMEDEGLLALKVYVEECFEFLBSNNYNTYRSKRYSSWYALK	137
QY	120	RTGQYKLGKPGOKATILFLPMSAKS	146
Db	138	RTGQYKLGKPGOKATILFLPMSAKS	164

RESULT 9
A40117
basic fibroblast growth factor - African clawed frog
C:Species: *Xenopus laevis* (African clawed frog)
C:Date: 10-Sep-1999 #sequence-Revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A40117, A29618
R:Krimelman, D.; Abirham, J.A.; Haaparanta, T.; Palisi, T.M.; Kirschner, M.W.
Science 242, 1053-1056, 1988
A:Title: The presence of fibroblast growth factor in the frog egg: its role as a natural
A:Reference number: A40117; MUID:85058621
A:Accession: A40117
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <KIM>
A:Cross-references: GB:M18067; NID:q214177; PIDN:AAA49726.1; PID:q214178; GB:M21092
R:Krimelman, D.; Kirschner, M.
Cell 51, 869-877, 1987
A:Title: Synergistic induction of mesoderm by FGF and TGF-beta and the identification of
A:Reference number: A29618; MUID:88052890
A:Accession: A29618
A:Molecule type: mRNA
A:Residues: 95-110,112-155 <KI2>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor

Query Match	81.8%	Score 644:	DB 1:	Length 155:
Best Local Similarity	82.9%	Pred.	No. 6.3e-57:	
Matches 121: Conservative		8: Mismatches 17:	Indels 0:	Gaps 0:

Qy 61 GYVSTKGCANNLYLAKEDGRLLASKCYTDECFPERLESNNNTYTYSRKYTSWYVALKR 120

Dd 70 GVASTIGITANNYLAMKEGRLTSLRCJTDCFFPERLEANNNTYTYSRKXSSWYVALKR 129

Dd 10 PRESEGGGTPTSPSGFMDPKRYCKNGGFLLRINSOGRVDGSKDKSDSHIKQLDAVER 69

Qy 1 PALPBGSGGAPRPHPFKDPRKYCKNGGFLLRHPSRDGVGVKKEDPHIKQLDAEER 60

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QY      121 TGQYKLGPKTGPQKAILFLPMSAKS 146
        ||||| | ||||| ||||| |||||
Db      130 TGQYKNGSSTGPGQKAILFLPMSAKS 155
```

RESULT 10
A32484
basic fibroblast growth factor precursor, 25k - guinea pig (fragments)
C:Species: Cavia porcellus (guinea pig)
C:Date: 20-Oct-1989 #sequence_revision 20-Oct-1989 #text_change 15-Jun-1996
C:Accession: A32484
R:Sommer, A.; Moscatelli, D.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 160, 1267-1274, 1989
A:Title: An amino-terminally extended and post-translationally modified form of a 25k
A:Reference number: A32484; MUID:89273588
A:Accession: A32484
A:Status: preliminary; nucleic acid sequence not shown; not compared with conceptual
A:Molecule type: mRNA
A:Residues: 1-125 <SOM>
C:Superfamily: fibroblast growth factor

Query Match	54.18;	Score 425.5;	DB 2;	Length 125;
Best Local Similarity	61.08;	Pred. No. 3.1e-35;		
Matches 89;	Conservative 5;	Mismatches 1;	Indels 51;	Gaps 3;

[illegible]

```

QY      121 TGQYKLGPKTGPQOKAIIFFLPMsAKS  146
        ||||| ||||| ||||| ||||| |||||
Db      100 TGQYKLGSKTGPQOKAIIFFLPMsAKS  125

```

RESULT 11

A60721

acidic fibroblast growth factor -.golden hamster

N:Alternate names: heparin-binding growth factor 1

C:Species: Mesocricetus auratus (golden hamster)

C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999

C:Accession: A60721

R:Hall, J.A.; Harris, M.A.; Malark, M.; Mansson, P.E.; Zhou, H.; Harris, S.E.

J. Cell. Biochem. 43, 17-26, 1990

A:Title: Characterization of the hamster DDT-1 cell afGF/HGBF-I gene and cDNA and its

A:Reference number: A60721; MUID:90270291

A:Accession: A60721

A:Status: not compared with conceptual translation

A:Molecule type: DNA

A:Residues: 1-155 <HAL>

C:Superfamily: Fibroblast growth factor

C:Keywords: growth factor; heparin binding

Query Match	51.5%	Score 405	DB 1	Length 155
Best Local Similarity	57.4%	Pred. No. 4.3e-33		
Matches 78	Conservative 17	Mismatches 39	Indels 2	Gaps 1

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Db      19 PPGNYKKPKLLYCSNGGHFLRLPDTGVTDRDRSDQHIOQLSAESAGAEVYIKGTENGQ 78
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QY 73 YLAMEKGRLASKCWMDECFEERLESNNYNTYRSRKYS--SWYVALKRTGQYKLGPKT 130
    ||| || | : :|| ||| :||| :||| :||| ||| : ||| ||| : ||| ||| :
Db 79 YLAMTDGLLGSGQTPNEECFLERLEENHNNTYTSKNAHEKNWVYGLKKNSSGCKRSPRT 138

```

QY 131 GPGOKAILELMSAKS 146
| | | | | | | | | |

Db 139 HYGQKAILFLPVSS 154

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:36:29 : Search time 23.13 Seconds
(without alignments)
244.404 Million cell updates/sec

Title: US-09-802-365-2
Perfect score: 787
Sequence: 1 PALPEDGSGAFPFGHFKDP.....GPKTGPQKAILFLPMSAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues
Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : SwissProt_40:*
Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	787	100.0	155	1	FGF2_BOVIN
2	781	99.2	155	1	FGF2_SHEEP
3	776	98.6	155	1	FGF2_HUMAN
4	759.5	96.5	154	1	FGF2_RAT
5	754.5	95.9	154	1	FGF2_MOUSE
6	736	93.5	137	1	FGF2_RABIT
7	734	93.3	158	1	FGF2_CHICK
8	717.5	91.2	156	1	FGF2_MONDO
9	644	81.8	155	1	FGF2_XENLA
10	405	51.5	155	1	FGF1_MESAU
11	395	50.2	155	1	FGF1_HUMAN
12	392.5	49.9	155	1	FGF1_CHICK
13	391	49.7	155	1	FGF1_MOUSE
14	389	49.4	152	1	FGF1_PIG
15	384	48.8	155	1	FGF1_BOVIN
16	252	32.0	194	1	FGF4_CHICK
17	251.5	32.0	256	1	FGF5_MOUSE
18	249.5	31.7	264	1	FGF5_MOUSE
19	248.5	31.7	266	1	FGF5_RAT
20	246	31.3	220	1	FGF3_CHICK
21	245.5	31.2	206	1	FGF4_HUMAN
22	245	31.1	208	1	FGF6_HUMAN
23	245	31.1	208	1	FGF6_MOUSE
24	243.5	30.9	206	1	FGF4_BOVIN
25	241	30.6	268	1	FGF5_HUMAN
26	236	30.0	187	1	FGF4_XENLA
27	235.5	29.9	237	1	FGF3_XENLA
28	235	29.9	245	1	FGF3_MOUSE
29	234	29.7	239	1	FGF3_HUMAN
30	232.5	29.5	202	1	FGF4_MOUSE
31	231.5	29.4	192	1	FGF4_XENLA
32	215	27.3	208	1	FGF9_HUMAN
33	215	27.3	208	1	FGF9_MOUSE

34	215	27.3	208	1	FGF9_RAT	P36364	rattus norv
35	211.5	26.9	209	1	FGF9_XENLA	O91875	xenopus lae
36	209	26.6	211	1	FGF8_HUMAN	O94995	homo sapien
37	206.5	26.2	207	1	FGF7_RAT	P79150	rattus norv
38	205.5	26.1	194	1	FGF7_CANFA	P79150	canis famli
39	205.5	26.1	207	1	FGF7_HUMAN	O43320	homo sapien
40	204.5	26.0	194	1	FGF7_MOUSE	P36363	mus musculu
41	203	25.8	208	1	FGF4_HUMAN	O15520	homo sapien
42	203	25.8	215	1	FGF4_RAT	P70492	rattus norv
43	202.5	25.7	194	1	FGF7_HUMAN	P21781	homo sapien
44	202.5	25.7	194	1	FGF7_SHEEP	P48808	ovis aries
45	200	25.4	209	1	FGF4_MOUSE	O35365	mus musculu

ALIGNMENTS

RESULT 1
ID FGF2_BOVIN STANDARD: PRT: 155 AA.
AC P03969;
DT 23-OCT-1986 (Rel. 02, Created)
DT 23-OCT-1986 (Rel. 02, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin) [Contains: Kidney-derived growth
DE factor].
GN FGF2 OR FGF-2.
OS Bos taurus (Bovine).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Bovinae; Bos.
OX NCBI_Taxid=9913;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=86261806; PubMed=2425435;
RA Abraham J.A., Mergia A., Whang J.L., Tumolo A., Friedman J.,
RA Hjerrild K.A., Gospodarowicz D., Fiddes J.C.;
RT "Nucleotide sequence of a bovine clone encoding the angiogenic
RT protein, basic fibroblast growth factor.";
RL Science 233:545-548(1986).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=87217066; PubMed=3472745;
RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;
RT "Human basic fibroblast growth factor: nucleotide sequence, genomic
RT organization, and expression in mammalian cells.";
RL Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).
RN [3]
RP SEQUENCE OF 10-155.
RX MEDLINE=86016731; PubMed=3863109;
RA Esch F., Baird A., Ling N., Ueno N., Hill F., Denroy L., Klepper R.,
RA Gospodarowicz D., Boehlen P., Guillemin R.;
RT "Primary structure of bovine pituitary basic fibroblast growth factor
RT (FGF) and comparison with the amino-terminal sequence of bovine brain
RT acidic FGF.";
RL Proc. Natl. Acad. Sci. U.S.A. 82:6507-6511(1985).
RN [4]
RP SEQUENCE OF 1-9.
RX MEDLINE=86295737; PubMed=3741423;
RA Ueno N., Baird A., Esch F., Ling N., Guillemin R.;
RT "Isolation of an amino terminal extended form of basic fibroblast
RT growth factor.";
RL Biochem. Biophys. Res. Commun. 138:580-588(1986).
RN [5]
RP SEQUENCE OF 25-41.
RC TISSUE=Kidney;
RX MEDLINE=86095426; PubMed=4081126;
RA Baird A., Esch F., Boehlen P., Ling N., Gospodarowicz D.;
RT "Isolation and partial characterization of an endothelial cell growth
RT factor from the bovine kidney: homology with basic fibroblast growth
RT factor.";
RL Regul. Pept. 12:201-213(1985).

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RN [6]
RP SEQUENCE OF 21-40.
RC TISSUE-Kidney;
RX MEDLINE=87119165; PubMed=3809608;
RA Ueno N., Baird A., Esch F., Shimazaki S., Ling N., Gullilemin R.;
RT "Purification and partial characterization of a mitogenic factor from
   bovine liver: structural homology with basic fibroblast growth
   factor.";
RL Regul. 16:135-145(1986).
RN [7]
RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
RX MEDLINE=91095983; PubMed=1702556;
RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T.,
   Hsu B.T., Rees D.C.;
RT "Three-dimensional structures of acidic and basic fibroblast growth
   factors.";
RL Science 251:90-93(1991).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
   IN VITRO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
   CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
   AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL, M13440; AAA30518.1; -.
DR PIR, A24663; GKBOB.
DR PIR, A24819; A24819.
DR PIR, A32878; A32878.
DR PDB, 1BAS; 31-OCT-93.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; ILLHBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
   3D-structure.
FT PROPEP 1 9
FT CHAIN 10 155
FT SITE 25 155
FT SITE 46 48
FT SITE 88 90
FT BINDING 27 31
FT BINDING 116 119
FT STRAND 30 34
FT STRAND 35 38
FT TURN 39 43
FT TURN 45 46
FT STRAND 49 52
FT TURN 55 56
FT TURN 58 60
FT HELIX 62 68
FT STRAND 69 70
FT TURN 71 76
FT STRAND 77 80
FT TURN 81 85
FT STRAND 87 88
FT TURN 91 94
FT STRAND 99 101
FT HELIX 103 107
FT STRAND 109 110
FT TURN 113 117

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FT TURN 121 122
FT STRAND 124 124
FT STRAND 127 127
FT TURN 129 130
FT STRAND 133 133
FT TURN 136 138
FT HELIX 141 142
FT TURN 144 146
FT HELIX 148 151
FT STRAND 155 AA; 17250 MW; BE6CE70FA6107129 CRC64;
SO SEQUENCE

Query Match
Best local similarity 100.0%; Score 787; DB 1; Length 155;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAAPPFGHFKDPKRLKCKNGCFPLRHPDGRVDGVREKSPHKLQDAER 60
   |||
DB 10 PALPEDGSGAAPPFGHFKDPKRLKCKNGCFPLRHPDGRVDGVREKSPHKLQDAER 69
   |||
OY 61 GVSISIKVCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYNTYRSRKYSWVALKR 120
   |||
DB 70 GVSISIKVCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYNTYRSRKYSWVALKR 129
   |||
OY 121 TGQYKLGPKTGPCKAKILFLPMSAKS 146
   |||
DB 130 TGQYKLGPKTGPCKAKILFLPMSAKS 155
   |||

RESULT 2
FEF2_SHEEP STANDARD: PRT; 155 AA.
AC P20003;
DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
   growth factor) (BFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Ovis aries (Sheep).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Caprinae; Ovis.
OX NCBI_TaxID=9940;
RN [1]
RP SEQUENCE FROM N.A.
RA Sutton R., Ward W.G., Raphael K.A., Cam G.R.;
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
RN [2]
RP SEQUENCE OF 9-155.
RX MEDLINE=88055577; PubMed=3678486;
RA Simpson R.J., Moritz R.L., Lloyd C.J., Fabri L.J., Nice E.C.,
   Rublira M.R., Burgess A.W.;
RT "Primary structure of ovine pituitary basic fibroblast growth
   factor.";
RL FEBS Lett. 224:128-132(1987).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
   IN VITRO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
   CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
   AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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DR EMBL: L36136; AAA31519.1; -
DR PIR: S00185; S00185.
DR HSSP: P09038; 1BRF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IL1HBGF.
DR Prodom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT SITE 45 48 CELL ATTACHMENT SITE (POTENTIAL).
FT SITE 87 90 CELL ATTACHMENT SITE (POTENTIAL).
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17280 MW; B5F2364BA610606D CRC64;

Query Match 99.2%; Score 781; DB 1; Length 155;
Best Local Similarity 99.3%; Pred. No. 3,1e-74;
Matches 145; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 1 PALPDDGSGAPPGPHFKDPKRLCKNGGFRLIHDPDGVDRKSDPHIKLOAEER 60
DB 10 PALPDDGSGSAPPPGHFKDPKRLCKNGGFRLIHDPDGVDRKSDPHIKLOAEER 69
OY 61 GVSATKGCANRYLAMKEDGRLASCVTDECFERLESNNYTRSKKYSWYALKR 120
DB 70 GVSATKGCANRYLAMKEDGRLASCVTDECFERLESNNYTRSKKYSWYALKR 129
OY 121 TGOYKLGPTGPGOKAILEFLPMASAKS 145
DB 130 TGOYKLGPTGPGOKAILEFLPMASAKS 155

RESULT 3
FGF2_HUMAN STANDARD: PRT; 155 AA.
AC P09038; ID FGF2_HUMAN

DT 01-NOV-1988 (Rel. 09, Created)
DT 01-NOV-1988 (Rel. 09, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast growth factor) (BGF) (Prostatropin).
GN FGF2 OR FGFb.

OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Homidae; Homo.
OX NCBI_TaxID=9606;

RP SEQUENCE FROM N.A.
RX MEDLINE=87053817; PubMed=3780670;
RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Friedman J.,
RA Gospodarowicz D., Fiddes J.C.;
RT "Human basic fibroblast growth factor: nucleotide sequence and genomic organization.";
RL EMBL J. 5:2523-2528(1986).

RP SEQUENCE FROM N.A.
RX MEDLINE=87217066; PubMed=3472745;
RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;
RT "Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";
RL Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).

RP SEQUENCE FROM N.A.
RA MEDLINE=87213338; PubMed=3579930;
RA Sommer A., Brewer M.T., Thompson R.C., Moscattelli D., Presta M.,
RA Rifkin D.B., Chittaro A., Faham S., Fox G.M., Arakawa T.,
RT "A form of human basic fibroblast growth factor with an extended amino terminus.";

RL Biochem. Biophys. Res. Commun. 144:543-550(1987).
RN [4]
RP SEQUENCE FROM N.A.
RX MEDLINE=87162468; PubMed=2435575;
RA Kurokawa T., Sasada K., Iwane M., Igarashi K.;
RT "Cloning and expression of cDNA encoding human basic fibroblast growth factor.";
RL FEBS Lett. 213:189-194(1987).
RN [5]
RP SEQUENCE FROM N.A.
RX MEDLINE=89184522; PubMed=2538817;
RA Prats H., Kagnad M., Prats A.C., Klagsbrun M., Lelias J.M.,
RA Liauzun P., Chalou P., Tauber J.P., Amalric F., Smith J.A.,
RA Caput D.;
RT "High molecular mass forms of basic fibroblast growth factor are initiated by alternative CUG codons.";
RL Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).
RN [6]
RP SEQUENCE OF 10-35.
RX MEDLINE=86275260; PubMed=3732516;
RA Gauschi P., Prater-Schroeder M., Boehlen P.;
RT "Partial molecular characterization of endothelial cell mitogens from human brain: acidic and basic fibroblast growth factors.";
RL FEBS Lett. 204:203-207(1986).
RN [7]
RP SEQUENCE OF 10-39.
RX MEDLINE=86186784; PubMed=3964259;
RA Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "Human brain-derived acidic and basic fibroblast growth factors: amino terminal sequences and specific mitogenic activities.";
RL Biochem. Biophys. Res. Commun. 135:541-548(1986).
RN [8]
RP SEQUENCE OF 2-22.
RX MEDLINE=87156686; PubMed=2435284;
RA Story M.T., Esch F., Shimazaki S., Sasse J., Jacobs S.C., Lawson R.K.;
RT "Amino-terminal sequence of a large form of basic fibroblast growth factor isolated from human benign prostatic hyperplastic tissue.";
RL Biochem. Biophys. Res. Commun. 142:702-709(1987).
RN [9]
RP X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
RX MEDLINE=91195367; PubMed=1707542;
RA Eriksson A.E., Cousens L.S., Weaver L.H., Matthews B.W.;
RT "Three-dimensional structure of human basic fibroblast growth factor.";
RL Proc. Natl. Acad. Sci. U.S.A. 88:3441-3445(1991).
RN [10]
RP X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
RX MEDLINE=94004464; PubMed=7691311;
RA Eriksson A.E., Cousens L.S., Matthews B.W.;
RT "Refinement of the structure of human basic fibroblast growth factor at 1.6-A resolution and analysis of presumed heparin binding sites by selenate substitution.";
RL Protein Sci. 2:1274-1284(1993).
RN [11]
RP X-RAY CRYSTALLOGRAPHY (1.8 ANGSTROMS).
RX MEDLINE=91195368; PubMed=1849658;
RA Zhang J., Cousens L.S., Barr P.J., Sprang S.R.;
RT "Three-dimensional structure of human basic fibroblast growth factor, a structural homolog of interleukin 1 beta.";
RL Proc. Natl. Acad. Sci. U.S.A. 88:3446-3451(1991).
RN [12]
RP X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
RX MEDLINE=92121151; PubMed=1769963;
RA Ago H., Kitagawa Y., Fujishima A., Matsuura Y., Katsube Y.;
RT "Crystal structure of basic fibroblast growth factor at 1.6-A resolution.";
RL J. Biochem. 110:360-363(1991).
RN [13]
RP X-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS).
RX MEDLINE=91095983; PubMed=1702556;
RA Zhu X., Komiya H., Chittaro A., Faham S., Fox G.M., Arakawa T.,
RA Hsu B.T., Rees D.C.;
RT "Three-dimensional structures of acidic and basic fibroblast growth

RT factors.";
 RL Science 251:90-93(1991).
 RN [14]
 RP STRUCTURE BY NMR.
 RX MEDLINE-97040521; PubMed-8885834;
 RA Moy F.J., Seadon A.P., Boehlen P., Powers R.;
 RT "High-resolution solution structure of basic fibroblast growth factor
 determined by multidimensional heteronuclear magnetic resonance
 spectroscopy.";
 RL Biochemistry 35:13552-13561(1996).
 CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC
 CC -I- SUBUNIT: MONOMER.
 CC
 CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC
 CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC
 CC
 DR EMBL; M17599; AAA52534.1; ALT_INIT.
 DR EMBL; X04431; CA28027.1; -;
 DR EMBL; X04432; CA28028.1; -;
 DR EMBL; X04433; CA28029.1; -;
 DR EMBL; M27968; AAA52448.1; -;
 DR EMBL; J04513; AAA52533.1; ALT_INIT.
 DR PIR; A25824; A25824.
 DR PIR; A26642; A26642.
 DR PIR; B24243; B24243.
 DR PIR; B24301; B24301.
 DR PIR; B32878; B32878.
 DR PIR; S00297; S00297.
 DR PDB; 2FGF; 15-APR-92.
 DR PDB; 4FGF; 15-JUL-93.
 DR PDB; 1FGA; 15-JUL-93.
 DR PDB; 1BBB; 03-APR-96.
 DR PDB; 1BFC; 03-APR-96.
 DR PDB; 1BFG; 16-JUN-97.
 DR PDB; 1BFG; 31-JAN-94.
 DR PDB; 2BPH; 30-APR-94.
 DR PDB; 1BLA; 08-NOV-96.
 DR PDB; 1BDD; 08-NOV-96.
 DR MIM; 134920; -;
 DR InterPro; IPR002209; HBGF_FGF.
 DR InterPro; IPR002348; IL1_HBGF.
 DR Pfam; PF00167; FGF; 1.
 DR PRINTS; PR00262; ILHBGF.
 DR PRODOM; PD000831; ILHBGF.
 DR SMART; SM00442; FGF; 1.
 DR PROSITE; PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 46 48
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT STRAND 35 38
 FT STRAND 39 43
 FT STRAND 45 46
 FT TURN 49 52
 FT STRAND 55 56
 FT TURN 58 60
 FT HELIX 62 66
 FT STRAND 62 66
 HEPARIN-BINDING GROWTH FACTOR 2.
 CELL ATTACHMENT SITE (POTENTIAL).
 CELL ATTACHMENT SITE (POTENTIAL).
 HEPARIN (POTENTIAL).
 HEPARIN (POTENTIAL).

FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT STRAND 99 101
 FT HELIX 103 107
 FT STRAND 109 110
 FT TURN 113 117
 FT STRAND 121 122
 FT TURN 124 124
 FT STRAND 127 127
 FT STRAND 129 130
 FT TURN 132 133
 FT STRAND 136 138
 FT HELIX 141 142
 FT TURN 144 146
 FT HELIX 148 152
 FT STRAND 152 152
 SQ SEQUENCE 155 AA; 17254 MW; BE6CE1373007129 CRC64;
 Query Match 98.6%; Score 776; DB 1; Length 155;
 Best Local Similarity 98.6%; Pred. No. 1e-75;
 Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;
 QY 1 PALPDGSGAPPPGHPDKRLYCKNGGFLRHPDGRVDSVRKSPDHKIQLOAEER 60
 DB 10 PALPDGSGGAPFPGFHNDPKRLYCKNGGFLRHPDGRVDSVRKSPDHKIQLOAEER 69
 QY 61 GVSISIKGCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSKRYSSWYALKR 120
 DB 70 GVSISIKGCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSKRYSSWYALKR 129
 QY 121 TGOYKLGPKTGPGOKAILFLPMSAKS 146
 DB 130 TGOYKLGSKTGPGOKAILFLPMSAKS 155
 RESULT 4
 FGF2_RAT
 ID FGF2_RAT STANDARD: PRT; 154 AA.
 AC P13109;
 DT 01-JAN-1990 (Rel. 13; Created)
 DT 01-JAN-1990 (Rel. 13; Last sequence update)
 DT 01-MAR-2002 (Rel. 41; Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
 DE growth factor) (BFGF) (Prostatopin).
 GN FGF2 OR FGF-2.
 OS Rattus norvegicus (Rat).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
 OX NCBI_TaxID=10116;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC STRAIN=SPRAGUE-DAWLEY; TISSUE=Ovary;
 RX MEDLINE-89061721; PubMed-3196337;
 RA Shinasaki S., Emoto N., Koba A., Mercado M., Shibata F.,
 RA Cooksey K., Baird A., Ling N.;
 RT "Complementary DNA cloning and sequencing of rat ovarian basic
 RT fibroblast growth factor and tissue distribution study of its mRNA.";
 RL Biochem. Biophys. Res. Commun. 157:256-263(1988).
 RN [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Brain;
 RX MEDLINE-88262516; PubMed-3387229;
 RA Kurokawa T., Seno M., Igarashi K.;
 RT "Nucleotide sequence of rat basic fibroblast growth factor cDNA.";
 RL Nucleic Acids Res. 16:5201-5201(1988).
 RN [3]
 RP SEQUENCE OF 1-28 FROM N.A.
 RC STRAIN=SPRAGUE-DAWLEY; TISSUE=Testis;
 RX MEDLINE-97200905; PubMed-9048734;
 RA Pasumathchi K.B.S., Jin Y., Cattini P.A.;

RT "Cloning of the rat fibroblast growth factor-2 promoter region and
RT its response to mitogenic stimuli in glioma C6 cells.";
RL J. Neurochem. 68:898-908(1997).
RN [4]
RP SEQUENCE OF 35-154 FROM N.A.
RC STRAIN-SPRAGUE-DAWLEY; TISSUE=Brain;
RX MEDLINE-92329546; PubMed-1378302;
RA El-Husseini A.E.D., Paterson J.A., Myal Y., Shiu R.P.C.;
RT "PCR detection of the rat brain basic fibroblast growth factor (bFGF)
RT mRNA containing a unique 3' untranslated region.";
RL Biochim. Biophys. Acta 1131:314-316(1992).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- TISSUE SPECIFICITY: FOUND IN ALL THE TISSUES EXAMINED.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; M22427; AAA41210.1; -
DR EMBL; X07285; CAA30265.1; -
DR EMBL; U78079; AAC3225.1; -
DR EMBL; X61697; CAA43863.1; -
DR PIR; S00876; S00876.
DR PIR; A31674; A31674.
DR HSSP; P09038; 1BPF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; ILHBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17139 MW; 1A0F14FF423D8403 CRC64;

Query Match 96.5%; Score 759.5; DB 1; Length 154;
Best Local Similarity 97.3%; Pred. No. 5.3e-72;
Matches 142; Conservative 2; Mismatches 1; Indels 1; Gaps 1;

QY 1 PALPEDGSGAPPGHFKDKPKRLYCKNGGFPLRIHPDGVADVGRKSDPHIKQLQDAEER 60
DB 10 PALPEDGG-GAPPGHFKDKPKRLYCKNGGFPLRIHPDGVADVGRKSDPHIKQLQDAEER 68
QY 61 GYVSIKGVCANRYLAKMEKGRLASKCVYDECFEFLRLSNNTYRSKRYSWYALAKR 120
DB 69 GYVSIKGVCANRYLAKMEKGRLASKCVYDECFEFLRLSNNTYRSKRYSWYALAKR 128
QY 121 TGOYKLGPKTGPQKAILFLPMSAKS 146
DB 129 TGOYKLGPKTGPQKAILFLPMSAKS 154

RESULT 5
FGF2_MOUSE STANDARD; PRT; 154 AA.
ID FGF2_MOUSE
AC P15655;
DT 01-APR-1990 (Rel. 14, Created)

DT 01-APR-1990 (Rel. 14, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (bFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE-90201563; PubMed-2318343;
RA Hebert J.M., Basilio C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cdnas encoding four mouse FGF family members and
RT characterization of cdnas encoding their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [2]
RP SEQUENCE FROM N.A.
RC STRAIN=C57BL/6J, A/J, AND NOD/LtJ; TISSUE=Spleen;
RA Ma R.Z., Teuscher C.;
RL Submitted (MAY-1998) to the EMBL/GenBank/DDI databases.
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; M30644; AAA37621.1; -
DR EMBL; AF065903; AAC17503.1; -
DR EMBL; AF065904; AAC17504.1; -
DR EMBL; AF065905; AAC17505.1; -
DR PIR; C37360; C37360.
DR HSSP; P09038; 1BPF.
DR MGD; MGI:95516; Fgf2.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; ILHBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17153 MW; 689F67741E274388 CRC64;

Query Match 95.9%; Score 754.5; DB 1; Length 154;
Best Local Similarity 96.6%; Pred. No. 1.8e-71;
Matches 141; Conservative 3; Mismatches 1; Indels 1; Gaps 1;

QY 1 PALPEDGSGAPPGHFKDKPKRLYCKNGGFPLRIHPDGVADVGRKSDPHIKQLQDAEER 60
DB 10 PALPEDGGA-APPGHFKDKPKRLYCKNGGFPLRIHPDGVADVGRKSDPHIKQLQDAEER 68
QY 61 GYVSIKGVCANRYLAKMEKGRLASKCVYDECFEFLRLSNNTYRSKRYSWYALAKR 120
DB 69 GYVSIKGVCANRYLAKMEKGRLASKCVYDECFEFLRLSNNTYRSKRYSWYALAKR 128
QY 121 TGOYKLGPKTGPQKAILFLPMSAKS 146

Db 129 TGOYKLGSKTGPQKAILFLPMSAKS 154

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|||||
RESULT 6
ID FGF2_RABIT STANDARD; PRT; 137 AA.
AC P48799;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 (HBGF-2) (Basic fibroblast growth
DE factor) (BFGF) (Prostacropin) (Fragment).
GN FGF2.
OS Oryctolagus cuniculus (Rabbit).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX NCBI_TaxID=9986;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN-NEW ZEALAND WHITE; TISSUE=Smooth muscle;
RX MEDLINE=93343209; Pubmed=8342599;
RA Winkles J.A., Friesel R., Alberts G.F., Janat M.F., Liu G.;
RT "Elevated expression of basic fibroblast growth factor in an
RT immortalized rabbit smooth muscle cell line.";
RL Am. J. Pathol. 143:518-527(1993).
CC - FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC - SUBUNIT: MONOMER.
CC - MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC - SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
CC EMBL: L12034; AAA31248.1; -.
CC DR HSSP: P09038; IBEF.
CC DR InterPro: IPR002209; HBGF_FGF.
CC DR Pfam: PF00167; FGF_1.
CC DR ProDom: PD000831; HBGF_FGF; 1.
CC DR SMART: SM00442; FGF; 1.
CC DR PROSITE: PS00247; HBGF_FGF; 1.
CC KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
CC FT BINDING 18 22 HEPARIN (POTENTIAL).
CC FT BINDING 107 110 HEPARIN (POTENTIAL).
CC FT NON_TER 137 137
CC FT SEQUENCE 137 AA; 15418 MW; 0D9E6457B88B8C51 CRC64;
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Query Match 93.5%; Score 736; DB 1; Length 137;
Best Local Similarity 99.3%; Pred. No. 1,3e-69;
Matches 136; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

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QY 1 PALPDEGGGAGPPGPHFKPKRKYCKNGGFFLRINHPDGVGVREKSDPHIKLOLAER 60
DB 1 PALPDEGGGAGPPGPHFKPKRKYCKNGGFFLRINHPDGVGVREKSDPHIKLOLAER 60
QY 61 GVAISIKGVANRYLAMKEDGRLLASCVYDECEFFERLESNNYNTYRSKRYSSWYVALKR 120
DB 61 GVAISIKGVANRYLAMKEDGRLLASCVYDECEFFERLESNNYNTYRSKRYSSWYVALKR 120
QY 121 TGOYKLGPKTGPQKAILFLPMSAKS 137
DB 121 TGOYKLGSKTGPQKAILFLPMSAKS 137
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RESULT 7
ID FGF2_CHICK STANDARD; PRT; 158 AA.
AC P48800;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Gallus gallus (chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=93246053; Pubmed=7683281;
RA Borja A.Z., Zeller R., Meljers C.;
RT "Expression of alternatively spliced bfgf first coding exons and
RT antisense mRNAs during chicken embryogenesis.";
RL Dev. Biol. 157:110-118(1993).
CC - FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC - SUBUNIT: MONOMER.
CC - MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC - SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@isb-sib.ch).
CC -----
CC EMBL: M95707; AAA48617.1; -.
CC DR HSSP: P09038; IBEF.
CC DR InterPro: IPR002348; IL1_HBGF.
CC DR Pfam: PF00167; FGF; 1.
CC DR PRINTS: PR00262; IL1_HBGF.
CC DR ProDom: PD000831; HBGF_FGF; 1.
CC DR SMART: SM00442; FGF; 1.
CC DR PROSITE: PS00247; HBGF_FGF; 1.
CC KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
CC FT PROPEP 1 12 BY SIMILARITY.
CC FT CHAIN 13 158 HEPARIN-BINDING GROWTH FACTOR 2.
CC FT BINDING 30 34 HEPARIN (POTENTIAL).
CC FT BINDING 119 122 HEPARIN (POTENTIAL).
CC FT SEQUENCE 158 AA; 17374 MW; 7B69B864C17F1816 CRC64;
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Query Match 93.3%; Score 734; DB 1; Length 158;
Best Local Similarity 93.2%; Pred. No. 2,4e-69;
Matches 136; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

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QY 1 PALPDEGGGAGPPGPHFKPKRKYCKNGGFFLRINHPDGVGVREKSDPHIKLOLAER 60
DB 13 PALPDEGGGAGPPGPHFKPKRKYCKNGGFFLRINHPDGVGVREKSDPHIKLOLAER 72
QY 61 GVAISIKGVANRYLAMKEDGRLLASCVYDECEFFERLESNNYNTYRSKRYSSWYVALKR 120
DB 73 GVAISIKGVANRYLAMKEDGRLLASCVYDECEFFERLESNNYNTYRSKRYSSWYVALKR 132
QY 121 TGOYKLGPKTGPQKAILFLPMSAKS 146
DB 133 TGOYKLGPKTGPQKAILFLPMSAKS 158
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```
RESULT 8
FGF2_MONDO
ID FGF2_MONDO STANDARD; PRT; 156 AA.
AC PA8798;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN RGF2.
OS Monodelphis domestica (Short-tailed grey opossum).
OC Eukaryota; Metazoa; Chordata; Cranialata; Vertebrata; Euteleostomi;
OC Mammalia; Metatheria; Didelphimorphia; Didelphidae; Monodelphis.
OX NCBI_Taxid=13616;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE-BYE;
RX MEDLINE=94296558; PubMed=8024698;
RA Kusewitt D.E., Sabourin C.L.K., Sherburn T.E., Ley R.D.;
RT "Characterization of cDNA encoding basic fibroblast growth factor of
RT the marsupial Monodelphis domestica.";
RL DNA Cell Biol. 13:549-554(1994).
CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -!- SUBUNIT: MONOMER.
CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: Z15154; CAAT854.1; ALT_INIT.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1
FT CHAIN 1 156 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 28 32 HEPARIN (POTENTIAL).
FT BINDING 117 120 HEPARIN (POTENTIAL).
SQ SEQUENCE 156 AA; 17303 MW; 7E653FCC49BF1209 CRC64;

Query Match 91.2%; Score 717.5; DB 1; Length 156;
Best Local Similarity 92.5%; Pred. No. 1.2e-67;
Matches 136; Conservative 4; Mismatches 6; Indels 1; Gaps 1;
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RESULT 9
FGF2_XENLA
ID FGF2_XENLA STANDARD; PRT; 155 AA.
AC P12226;
DT 01-OCT-1989 (Rel. 12, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF).
GN RGF2 OR FGF-2.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Cranialata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Anura; Mesobatrachia; Pipidae; Pipidae;
OX NCBI_Taxid=8355;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89058621; PubMed=3194757;
RA Kimelman D., Abraham J., Haaparanta T., Palisi T., Kirschner M.;
RT "The presence of fibroblast growth factor in the frog egg: its role
RT as a natural mesoderm inducer.";
RL Science 242:1053-1056(1988).
RN [2]
RP SEQUENCE OF 95-155 FROM N.A.
RX MEDLINE=88052890; PubMed=3479265;
RA Kimelman D., Kirschner M.;
RT "Synergistic induction of mesoderm by FGF and TGF-beta and the
RT identification of an mRNA coding for FGF in the early Xenopus
RT embryo.";
RL Cell 51:869-877(1987).
CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL: M18067; AAA49726.1; -.
DR PIR: A29618; A29618.
DR PIR: A40117; A40117.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1
FT CHAIN 1 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
FT CONFLICT 111 111 MISSING (IN REF. 2).
SQ SEQUENCE 155 AA; 17241 MW; 036735C8063142FD CRC64;

Query Match 81.8%; Score 644; DB 1; Length 155;
Best Local Similarity 82.9%; Pred. No. 5.4e-60;
Matches 121; Conservative 8; Mismatches 17; Indels 0; Gaps 0;
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OY 121 TGOYKLGPKTGGGKAILFLPMASAKS 146
      ||||| 1 |||||
Db 130 TGOYKNGSSTGPGOKAILFLPMASAKS 155

RESULT 10
FGFI_MESAU STANDARD; PRT; 155 AA.
ID FGFI_MESAU
AC P34004;
DT 01-FEB-1994 (Rel. 28, Created)
DT 01-FEB-1994 (Rel. 28, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN FGFI OR FGF-1.
OS Mesocricetus auratus (Golden hamster).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
OC Mesocricetus.
OX NCBI_TaxID=10036;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=90270291; PubMed=1693366;
RA Hall J.A., Harris M.A., Malark M., Manson P.E., Zhou H., Harris S.E.;
RT "Characterization of the hamster DDT-1 cell atGF/HGF-I gene and cDNA
RT and its modulation by steroids."
RL J. Cell. Biochem. 43:17-26(1990).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES BFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
DR PIR: A60721; A60721.
DR HSSP: P05230; 1RML.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILLHBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1 15 BY SIMILARITY.
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
FT SEQUENCE 155 AA; 17403 MW; 41E5EC760E412CC5 CRC64;

Query Match 51.5%; Score 405; DB 1; Length 155;
Best Local Similarity 57.4%; Pred. No. 3.8e-35;
Matches 78; Conservative 17; Mismatches 39; Indels 2; Gaps 1;

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DT 13-AUG-1987 (Rel. 05, Last sequence update)
DT 13-AUG-1987 (Rel. 05, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF) (Beta-endothelial cell growth factor) (ECGF-
DE beta).
GN FGFI OR FGFA.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=86261805; PubMed=3523756;
RA Jaye M., Howk R., Burgess W., Ricca G.A., Chiu I.-M., Ravera M.W.,
RA O'Brien S.J., Modi W.S., Maciag T., Drohan W.N.;
RT "Human endothelial cell growth factor: cloning, nucleotide sequence,
RT and chromosome localization."
RL Science 233:541-545(1986).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=90073637; PubMed=2590193;
RA Wang W.P., Quick D., Balcerzak S.P., Needleman S.W., Chiu I.M.;
RT "Cloning and sequence analysis of the human acidic fibroblast growth
RT factor gene and its preservation in leukemia patients."
RN [6]
RP SEQUENCE FROM N.A.
RX MEDLINE=92202857; PubMed=1372643;
RA Li Y.L., Kha H., Golden J.A., Mischelisen A.A.J., Goetzl E.J.,
RA Turk E.J.;
RT "An acidic fibroblast growth factor protein generated by alternate
RT splicing acts like an antagonist."
RN [7]
RP SEQUENCE OF 1-154 FROM N.A.
RX MEDLINE=94069734; PubMed=7504343;
RA Zhao X.M., Yeoh T.K., Hiebert M., Frist W.H., Miller G.G.;
RT "The expression of acidic fibroblast growth factor (heparin-binding
RT growth factor-1) and cytokine genes in human cardiac allografts and T
RT cells."
RL Transplantation 56:1177-1182(1993).
RN [8]
RP SEQUENCE OF 1-40 FROM N.A.
RX MEDLINE=90365758; PubMed=2393407;
RA Crumley G., Dione C.A., Jaye M.;
RT "The gene for human acidic fibroblast growth factor encodes two
RT upstream exons alternatively spliced to the first coding exon."
RL Biochem. Biophys. Res. Commun. 171:7-13(1990).

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[9]
RN SEQUENCE OF 16-155.
RP MEDLINE=86296647; PubMed=2427112;
RA Harper J.W., Strydom D.J., Lobb R.R.;
RT "Human class I heparin-binding growth factor: structure and homology
to bovine acidic brain fibroblast growth factor.";
RL Biochemistry 25:4097-4103(1986).
RN [10]
RP SEQUENCE OF 16-155.
RX MEDLINE=86295741; PubMed=3527167;
RA Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "The complete amino acid sequence of human brain-derived acidic
fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 138:611-617(1986).
RN [11]
RP SEQUENCE OF 16-155.
RX MEDLINE=87048871; PubMed=3778488;
RA Gautschi-Sova P., Mueller T., Boehlen P.;
RT "Amino acid sequence of human acidic fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 140:874-880(1986).
RN [12]
RP SEQUENCE OF 16-47.
RX MEDLINE=8616784; PubMed=3964259;
RA Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "Human brain-derived acidic and basic fibroblast growth factors:
amino terminal sequences and specific mitogenic activities.";
RL Biochem. Biophys. Res. Commun. 135:541-548(1986).
RN [13]
RP SEQUENCE OF 16-49.
RX MEDLINE=86275260; PubMed=3732516;
RA Gautschi P., Fritter-Schroeder M., Eoehlen P.;
RT "Partial molecular characterization of endothelial cell mitogens from
human brain: acidic and basic fibroblast growth factors.";
RL FEBS Lett. 204:203-207(1986).
RN [14]
RP X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS).
RX MEDLINE=96194129; PubMed=8652550;
RA Blaber M., Disalvo J., Thomas K.A.;
RT "X-ray crystal structure of human acidic fibroblast growth factor.";
RL Biochemistry 35:2086-2094(1996).
RN [15]
RP STRUCTURE BY NMR OF 24-155.
RX MEDLINE=9435885; PubMed=7521397;
RA Plueda-Lucena A., Jimenez M.A., Nieto J.L., Santoro J., Rico M.,
Gimenez-Gallego G.;
RT "1H-NMR assignment and solution structure of human acidic fibroblast
growth factor activated by inositol hexasulfate.";
RL J. Mol. Biol. 242:81-98(1994).
RN [16]
RP STRUCTURE BY NMR OF 24-155.
RX MEDLINE=97107535; PubMed=8950275;
RA Plueda-Lucena A., Jimenez M.A., Lozano R.M., Nieto J.L., Santoro J.,
Rico M., Gimenez-Gallego G.;
RT "Three-dimensional structure of acidic fibroblast growth factor in
solution: effects of binding to a heparin functional analog.";
RL J. Mol. Biol. 264:162-178(1996).
RN [17]
RP STRUCTURE BY NMR OF 25-155.
RX MEDLINE=98387896; PubMed=9719643;
RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gimenez-Gallego G.;
RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
6-naphthalenesulfonate: a minimal model for the anti-tumoral
action of suramin and suradistas.";
RL J. Mol. Biol. 281:899-915(1998).
CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -I- SUBUNIT: MONOMER.
CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
THAN DOES HBGF.
CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.

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DR EMBL; M13361; AAA79245.1; -;
DR EMBL; X51943; CAA36206.1; -;
DR EMBL; M30492; AAA52446.1; -;
DR EMBL; M30490; AAA52446.1; JOINED.
DR EMBL; M30491; AAA52446.1; JOINED.
DR EMBL; M60515; AAA51672.1; -;
DR EMBL; M60516; AAA51673.1; -;
DR EMBL; M23087; AAA52638.1; -;
DR EMBL; M23086; AAA52638.1; JOINED.
DR EMBL; S67291; AAB29057.2; -;
DR EMBL; X65778; CAA46661.1; -;
DR PIR; A23553; A23553.
DR PIR; A24243; A24243.
DR PIR; A24301; A24301.
DR PIR; A24662; A24662.
DR PIR; A24820; A24820.
DR PIR; A26386; A26386.
DR PIR; A33665; A33665.
DR PIR; S18217; S18217.
DR PDB; 2AFG; 15-OCT-95.
DR PDB; 1AXM; 22-APR-98.
DR PDB; 2AXM; 22-APR-98.
DR PDB; 1RML; 11-NOV-98.
DR MIM; I31220; -;
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILL_HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
KW 3D-structure.
FT PROPER 1 15
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT MOD_RES 2 2 ACETYLTATION.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17460 MW; F586EBBEP09F1580 CRC64;

Query Match 50.2%; Score 395; DB 1; Length 155;
Best Local Similarity 56.6%; Pred. No. 4.2e-34;
Matches 77; Conservative 17; Mismatches 40; Indels 2; Gaps 1;

QY 13 PRGHRKDKRLKCYCKRGFFLRHPDGRVDVGRKSDPHIKIQLOAEENGVSIRKVCANR 72
DB 19 PPGNYKKRKLKLYCSNGSHFLRLPDGTVGTRDRSDHILQLSAESVGEYIKSTETGQ 78
QY 73 YLAMEKEDRLASKCVTECEFFERLESNNNTYTSRKYSS--SWYALKRRTGYQKLGPKT 130
DB 79 YLAMTDDLLIGSQTPNEECLEFLERLEENHNTYISKHAENMWVGKKNSCKRGKRT 138
QY 131 GPGQKAILFLPMASAKS 146
DB 139 HYGQKAILFLPLPVSS 154

RESULT 12
FGL_CHICK STANDARD; PRT; 155 AA.
AC P19596;
DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)

DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF) (Alpha-endothelial cell growth factor).
GN FGFL OR FGF-1.
OS Gallus gallus (chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=91347925; PubMed=1715259;
RT "Differentiating and mature neurons express the acidic fibroblast
RT growth factor gene during chick neural development."
RL Development 111:1143-1154(1991).
RN [2]
RP SEQUENCE FROM N.A.
RX Martin G.R., Han J.K.;
RL Submitted (JUL-1995) to the EMBL/GenBank/DBJ databases.
RN [3]
RP SEQUENCE OF 22-48.
RX MEDLINE=88296438; PubMed=3402441;
RA Risaau W., Gautschi-Sova P., Boehlen P.;
RT "Endothelial cell growth factors in embryonic and adult chick brain
RT are related to human acidic fibroblast growth factor."
RL EMO J. 7:959-962(1988).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES BFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
CC EMBL: S63263; AAB19629.1; -;
CC DR EMBL: U31863; AAA80310.1; -;
CC DR EMBL: S63261; AAD13942.1; -;
CC DR PIR: S02639; S02639.
CC DR HSSP: P05230; ZAXM.
CC DR InterPro: IPR002209; HBGF_FGF.
CC DR InterPro: IPR002348; IIL_HBGF.
CC DR Pfam: PF00167; FGF_1.
CC DR PRINTS: PR00262; IILHBGF.
CC DR ProDom: PD000831; HBGF_FGF_1.
CC DR SMART: SM00442; FGF_1.
CC DR PROSITE: PS00247; HBGF_FGF_1.
CC DR Growth factor; Mltogen; Angiogenesis; Heparin-binding.
CC KW PROPEP 1
CC FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
CC FT CHAIN 22 155 ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
CC FT BINDING 24 28 HEPARIN (POTENTIAL).
CC FT BINDING 113 116 HEPARIN (POTENTIAL).
CC SEQUENCE 155 AA; 17322 MW; 8EDB70545E2B4365 CRC64;
Query Match 49.9%; Score 392.5; DB 1; Length 155;
Best Local Similarity 55.2%; Pred. No. 7.6e-34;
Matches 79; Conservative 21; Mismatches 38; Indels 5; Gaps 2;
OY 2 ALPEGGGSAFPFGPHKPKRLRYLKHGPFLLIHPDGRVYGRKSDPHIKIQLQAEERG 61
DB 11 ALTERFG---LPFGNYKPKLLKCSNGHFLRLPDGKVDGRDSDGDIQIQLQSAEDVG 67
OY 62 VVSIKVCANRYLAKEDGRLLASRCVTDCEFFERLESNNYNTYRSRKY--SWYVALK 119

DB 68 EYIKSTASGOVIAMDTNGLLYSQLPEECLEFLERLEENHYISKRHAKNFWVLK 127
OY 120 RTGQYKLGPKTGPQOKATLFLPM 142
DB 128 KNGSKLSPRTHYGOKATLFLPL 150
RESULT 13
FGFL_MOUSE
ID FGFL_MOUSE STANDARD: PRT; 155 AA.
AC P10935;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1989 (Rel. 11, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN FGFL OR FGF-1 OR FGFA.
OS Mus musculus (Mouse), and
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090, 10116.
RN [1]
RP SEQUENCE FROM N.A.
RC SPECIES-Rat;
RX MEDLINE=89240051; PubMed=2470029;
RA Goodrich S., Yan G.C., Bahrenburg K., Mansson P.E.;
RT "The nucleotide sequence of rat heparin binding growth factor 1
RT (HBGF-1)."
RL Nucleic Acids Res. 17:2867-2867(1989).
RN [2]
RP SEQUENCE FROM N.A.
RC SPECIES-Mouse;
RX MEDLINE=90201563; PubMed=2318343;
RA Hebert J.M., Basilico C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis."
RL Dev. Biol. 138:454-463(1990).
RN [3]
RP SEQUENCE FROM N.A.
RC SPECIES-Mouse;
RX MEDLINE=97128312; PubMed=8972905;
RA Madral F., Hackshaw K.V., Chiu I.M.;
RT "Cloning and characterization of the mouse Fgf-1 gene."
RL Gene 179:231-236(1996).
RN [4]
RP SEQUENCE FROM N.A.
RC SPECIES-Mouse; STRAIN-BALB/C;
RX MEDLINE=97094746; PubMed=8939980;
RA Alam K.Y., Frosthalm A., Hackshaw K.V., Evans J.E., Rotter A.,
RA Chiu I.M.;
RT "Characterization of the 1B promoter of fibroblast growth factor 1
RT and its expression in the adult and developing mouse brain."
RL J. Biol. Chem. 271:30263-30271(1996).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@sib-sib.ch).
CC -----
CC EMBL: X14232; CAA32448.1; -;
CC DR EMBL: M30641; AAA37618.1; -;
CC DR EMBL: U36459; AAC52969.1; -;

RESULT	15			
FCFL_BOVIN				
ID	FCFL_BOVIN	STANDARD:	PRT:	155 AA.
AC	P03968;			
DT	23-OCT-1986 (Rel. 02, Created)			
DT	01-MAR-1989 (Rel. 10, Last sequence update)			
DT	01-MAR-2002 (Rel. 41, Last annotation update)			
DE	Hepatin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF) (Prostaropin) (Endothelial cell growth factor beta and alpha chains) (Acidic eye-derived growth factor II) (EDGF II).			
DE	FCGF1 OR FGF-1 OR FGFA OR HBGF-1 OR AFGF.			
GN	Bos taurus (Bovine).			
OS	Eukaryota; Metazoa; Chordata; Craniata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae			
OC	Bovidae; Bovinae; Bos.			
OC	NCBI_TaxID=9913;			
OX	[1]			
RN	SEQUENCE FROM N.A.			
RP	TISSUE=Retina;			
RC	MEDLINE=89083506; PubMed=3205724;			
RX	Halley C., Courtois Y., Laurent M.;			
RA				

RT "Nucleotide sequence of bovine acidic fibroblast growth factor cDNA.";
 RL Nucleic Acids Res. 16:10913-10913(1988).
 RN [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE-RETINA.
 RX MEDLINE=89078619; PubMed=2849564;
 RA Alterio J., Halley C., Brou C., Soussi T., Courtois Y., Laurent M.;
 RT "Characterization of a bovine acidic FGF cDNA clone and its
 expression in brain and retina.";
 RL FEBS Lett. 242:41-46(1988).
 RN [3]
 RP SEQUENCE OF 2-155.
 RX MEDLINE=87016918; PubMed=3532107;
 RA Burgess W.H., Mehman T., Marshak D.R., Fraser B.A., Maciag T.;
 RT "Structural evidence that endothelial cell growth factor beta is the
 precursor of both endothelial cell growth factor alpha and acidic
 fibroblast growth factor.";
 RL Proc. Natl. Acad. Sci. U.S.A. 83:7216-7220(1986).
 RN [4]
 RP SEQUENCE OF 2-155.
 RX MEDLINE=87026586; PubMed=3768327;
 RA Crabb J.W., Ames L.G., Carr S.A., Johnson C.M., Roberts G.D.,
 RA Bordoli R.S., McKeenan W.L.;
 RT "Complete primary structure of prostatiopin, a prostate epithelial
 cell growth factor.";
 RL Biochemistry 25:4988-4993(1986).
 RN [5]
 RP SEQUENCE OF 16-155.
 RX MEDLINE=86070224; PubMed=4071057;
 RA Gimenez-Galligo G., Rodrey J., Bennett C., Rios-Candelore M.,
 RA Disalvo J., Thomas K.;
 RT "Brain-derived acidic fibroblast growth factor: complete amino acid
 sequence and homologues.";
 RL Science 230:1385-1388(1985).
 RN [6]
 RP SEQUENCE OF 16-44, AND COMPOSITION.
 RX MEDLINE=86055750; PubMed=4065099;
 RA Boehlen P., Esch F., Baird A., Gospodarowicz D.;
 RT "Acidic fibroblast growth factor (FGF) from bovine brain:
 RT amino-terminal sequence and comparison with basic FGF.";
 RL EMBO J. 4:1951-1956(1985).
 RN [7]
 RP SEQUENCE OF 16-56 FROM N.A.
 RX MEDLINE=86261806; PubMed=2425435;
 RA Abraham J.A., Merz A., Whang J.L., Tumolo A., Friedman J.,
 RA Hjerild K.A., Gospodarowicz D., Fiddes J.C.;
 RT "Nucleotide sequence of a bovine clone encoding the angiogenic
 protein, basic fibroblast growth factor.";
 RL Science 233:545-548(1986).
 RN [8]
 RP SEQUENCE OF 16-45.
 RX MEDLINE=89231704; PubMed=2714282;
 RA Oulinkler W., Maaberg M., Bernotat-Danielowski S., Luethe N.,
 RA Sharma H.S., Schaper W.;
 RT "Isolation of heparin-binding growth factors from bovine, porcine and
 canine hearts.";
 RL Eur. J. Biochem. 181:67-73(1989).
 RN [9]
 RP SEQUENCE OF 1-18 FROM N.A.
 RA Philippe J.M., Renaud F., Desset S., Laurent M.;
 RL Submitted (JUL-1992) to the EMBL/GenBank/DBJ databases.
 RN [10]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RX MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T.,
 RA Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth
 factors.";
 RL Science 251:90-93(1991).
 CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.

CC -I- SUBUNIT: MONOMER.
 CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
 CC THAN DOES BFGF.
 CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 DR EMBL; M13439; AAA30516.1; -;
 DR EMBL; X13221; CAA31610.1; -;
 DR EMBL; X14032; CAA32192.1; -;
 DR EMBL; M35608; AAA30517.1; -;
 DR EMBL; X66446; CAA47063.1; -;
 DR EMBL; M97660; AAA30563.1; -;
 DR EMBL; M97661; AAA30564.1; -;
 DR PIR; A01385; GKBOA.
 DR PIR; A25043; A25043.
 DR PIR; B25043; B25043.
 DR PIR; C25043; C25043.
 DR PIR; A24477; A24477.
 DR PIR; B24663; B24663.
 DR PIR; S02102; S02102.
 DR PDB; 1BAR; 3i-OCF-93.
 DR PDB; 1AFC; 3i-OCF-93.
 DR InterPro; IPR002209; HBGF_FGF.
 DR InterPro; IPR002348; ILL_HBGF.
 DR Pfam; PF00167; FGF; 1.
 DR PRINTS; PR00262; ILLHBGF.
 DR PRODOM; PD000831; HBGF_FGF; 1.
 DR SMART; SM00442; FGF; 1.
 DR PROSITE; PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
 KW 3D-structure.
 FT PROPEP 1 15
 FT CHAIN 2 155
 FT CHAIN 16 155
 FT CHAIN 22 155
 FT MOD_RES 2 2
 FT BINDING 24 28
 FT BINDING 113 116
 FT STRAND 32 34
 FT TURN 37 40
 FT STRAND 42 43
 FT TURN 46 49
 FT STRAND 46 49
 FT HELIX 55 57
 FT STRAND 59 61
 FT STRAND 69 69
 FT STRAND 71 73
 FT STRAND 79 82
 FT TURN 84 85
 FT STRAND 87 91
 FT HELIX 96 98
 FT STRAND 100 100
 FT STRAND 103 104
 FT TURN 106 107
 FT STRAND 110 111
 FT STRAND 113 114
 FT STRAND 116 121
 FT STRAND 123 123
 FT STRAND 126 126
 FT TURN 129 129
 FT STRAND 132 132
 FT STRAND 134 134
 FT HELIX 135 137
 FT TURN 140 141
 FT TURN 144 145
 FT STRAND 147 150

SQ SEQUENCE 155 AA; 17493 MW; F636641F189F9BFD CRC64;

Query Match 48.88; Score 384; DB 1; Length 155;

Best Local Similarity 55.18; Pred. No. 5.8e-33; Matches 75; Conservative 20; Mismatches 39; Indels 2; Gaps 1;

```

QY 13 PGHFKDPKRLYCKNGGFFLRHPDGRVDJYREKSDPHIKLQQAERGVVSIKGVCANR 72
   |::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||
Db 19 PLGNVKKRKLKLYCSNGYFLRLPDGTVDJTKDRSDQHQLQCAESIGEVYIKSTETGQ 78
   :|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||
QY 73 YLAKEDGRLIASKCVTDECFEERLESNNNTYRSKRYSS--WYVALKRTGQYKLGPKT 130
   :|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||
Db 79 FLAMDIGILYGSQTPNEECLEERLEENHYNTYISKKAHKEHMFVGLKNGRSKLGDPRT 138
   :|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||
QY 131 GPGKAILFLPMSAKS 146
   |||||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||::|||
Db 139 HFGOKAILFLPLPVSS 154

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Search completed: June 7, 2002, 14:46:42
Job time: 613 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:35:44 ; Search time 78.17 Seconds
(without alignments)
323.107 Million cell updates/sec

Title: US-09-802-365-2
Perfect score: 787
Sequence: 1 PALPEDGSGAFPPGHFKDP.....GPKTGPCKAILFLPMASAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :

SPTREMBL_19:*

- 1: sp_bacteria:*
- 2: sp_bacteria:*
- 3: sp_fungi:*
- 4: sp_human:*
- 5: sp_invertebrate:*
- 6: sp_mammal:*
- 7: sp_mhc:*
- 8: sp_organelle:*
- 9: sp_phage:*
- 10: sp_plant:*
- 11: sp_prodent:*
- 12: sp_virus:*
- 13: sp_vertebrate:*
- 14: sp_unclassified:*
- 15: sp_virus:*
- 16: sp_bacteriap:*
- 17: sp_archaeap:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	776	98.6	196	4 P78443	P78443 homo sapien
2	739	93.9	153	11 Q925A3	Q925A3 mus musculu
3	699	88.8	170	11 Q60487	Q60487 cavia porce
4	693	88.1	130	6 O77767	O77767 canis faml1
5	665	84.5	155	13 Q90Y92	Q90Y92 cynops pyrr
6	576	73.2	111	6 Q9BDX1	Q9BDX1 macaca mula
7	572	72.7	108	6 Q9N1S7	Q9N1S7 capreolus c
8	565	71.8	125	13 Q98TD8	Q98TD8 cynops pyrr
9	488	62.0	109	11 Q925A1	Q925A1 mus musculu
10	484	61.5	112	11 Q925A2	Q925A2 mus musculu
11	479.5	60.9	146	13 Q07659	Q07659 gallus gall
12	479	60.9	101	13 P79706	P79706 cynops pyrr
13	342	43.5	76	6 Q9N0V2	Q9N0V2 ovis aries
14	300	38.1	106	6 Q9N1S8	Q9N1S8 capreolus c
15	287	36.5	114	4 Q00527	Q00527 homo sapien
16	287	36.5	114	4 Q16443	Q16443 homo sapien

17	246	31.3	196	13 Q9YH31	Q9YH31 notophthalm
18	242	30.7	124	13 Q90XQ5	Q90XQ5 ambystoma m
19	228	29.0	206	13 Q9YGD8	Q9YGD8 oncorhynch
20	221	28.1	111	13 Q90XQ1	Q90XQ1 ambystoma m
21	214	27.2	208	6 Q95L12	Q95L12 sus scrofa
22	210	26.7	191	13 Q9DFC9	Q9DFC9 brachydanio
23	207	26.3	208	13 Q9PYV1	Q9PYV1 xenopus lae
24	207	26.3	212	11 Q9ESI9	Q9ESI9 mus musculu
25	205.5	26.1	207	11 Q9ESI8	Q9ESI8 mus musculu
26	205.5	26.1	207	11 Q9ER05	Q9ER05 mus musculu
27	203	25.8	208	6 Q95K97	Q95K97 macaca fasc
28	203	25.8	212	11 Q9ES79	Q9ES79 rattus norv
29	202.5	25.7	212	13 Q42407	Q42407 gallus gall
30	195.5	24.8	134	13 Q90XQ3	Q90XQ3 ambystoma m
31	193.5	24.6	213	6 Q9N1B9	Q9N1B9 ovis aries
32	193	24.5	208	4 Q96P59	Q96P59 homo sapien
33	188	23.9	112	13 Q90XP9	Q90XP9 ambystoma m
34	186.5	23.7	186	6 Q95L47	Q95L47 mustela vis
35	186.5	23.7	237	13 Q91A16	Q91A16 rattus norv
36	185.5	23.6	252	11 Q89096	Q89096 rattus norv
37	185.5	23.6	253	13 Q91A15	Q91A15 rattus norv
38	180.5	22.9	185	11 Q9ERN5	Q9ERN5 rattus norv
39	177.5	22.6	181	11 Q924B4	Q924B4 rattus norv
40	176.5	22.4	127	4 Q99517	Q99517 homo sapien
41	175.5	22.3	302	11 Q9CSX5	Q9CSX5 mus musculu
42	172.5	21.9	199	13 Q91A13	Q91A13 gallus gall
43	171	21.7	425	5 Q76831	Q76831 caenorhabdi
44	170.5	21.7	245	13 Q9W6A2	Q9W6A2 gallus gall
45	169.5	21.5	181	13 Q91A17	Q91A17 gallus gall

ALIGNMENTS

RESULT 1

P78443 PRELIMINARY; PRT; 196 AA.

AC P78443;

DT 01-MAY-1997 (TREMBLrel. 03, Created)

DT 01-MAY-1997 (TREMBLrel. 03, Last sequence update)

DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)

DE 21 KDA BASIC FIBROBLAST GROWTH FACTOR (BFGF).

GN BFGF2.

OS Homo sapiens (Human).

OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;

OC Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.

OX NCBI_TaxID=9606;

RN [1]

RP SEQUENCE FROM N.A.

RX MEDLINE=89184522; PubMed=2538817;

RA Prats H., Kaghad M., Prats A.C., Klagsbrun M., Lelias J.M.,

RA Liauzun P., Chalou P., Tauber J.P., Amaric F., Smith J.A., Caput D.;

RT "High molecular mass forms of basic fibroblast growth factor are

RT initiated by alternative CUG codons."

RL Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).

RN [2]

RP SEQUENCE OF 81-168 FROM N.A.

RX MEDLINE=93038590; PubMed=1417798;

RA Watson R., Anthony F., Pickett M., Lambden P., Masson G.M.,

RA Thomas E.J.;

RT "Reverse transcription with nested polymerase chain reaction shows

RT granulosa and cumulus cells from in vitro fertilisation patients."

RL Biochem. Biophys. Res. Commun. 187:1227-1231(1992).

DR EMBL; J04513; AAA52532.1; -.

DR EMBL; S47380; ADI3853.1; -.

DR HSSP; P09038; 1BFF.

DR InterPro; IPR002209; HBGF_FGF.

DR InterPro; IPR002348; ILL_HBGF.

DR Pfam; PF00167; FGF; 1.

DR PRINTS; PR00262; ILLHBGF.

DR ProDom; PD000831; HBGF_FGF; 1.

DR SMART; SM00442; FGF; 1.

DR PROSITE; PS00247; HBGF_FGF; 1.
SQ SEQUENCE 196 AA; 21203 MW; DB5447137E60343 CRC64;

Query Match 98.6%; Score 776; DB 4; Length 196;
Best Local Similarity 98.6%; Pred. No. 4.6e-77;
Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 1 PALPDDGGSGAAPPFGHFDPRKLYCKNGGFFLRHHPDGRVDSVREKSDPHIKLOQAEER 60
DB 51 PALPDDGGSGAAPPFGHFDPRKLYCKNGGFFLRHHPDGRVDSVREKSDPHIKLOQAEER 110
OY 61 GVSISIKGCANRYLAMKEDGRLASKCYVDECFEFERLESNNYNTYRSKYSWYALKR 120
DB 111 GVSISIKGCANRYLAMKEDGRLASKCYVDECFEFERLESNNYNTYRSKYSWYALKR 170
OY 121 TGOYKLGKPTGPGOKAILFLPMSAKS 146
DB 171 TGOYKLGKPTGPGOKAILFLPMSAKS 196

RESULT 2
ID Q925A3 PRELIMINARY; PRT; 153 AA.

AC Q925A3
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DE 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
CN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Mus.
NCB Taxid=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN-FVB/N.
RA Dicks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RT expressed in mouse embryos."
RL Submitted (FEB-2001) to the EMBL/Genbank/DBJ databases.
DR EMBL: AY027551; AAK52308.1; -
SQ SEQUENCE 153 AA; 17024 MW; AD8163CDBFA2PAAB CRC64;

Query Match 93.9%; Score 739; DB 11; Length 153;
Best Local Similarity 95.9%; Pred. No. 3.8e-73;
Matches 140; Conservative 3; Mismatches 1; Indels 2; Gaps 2;

OY 1 PALPDDGGSGAAPPFGHFDPRKLYCKNGGFFLRHHPDGRVDSVREKSDPHIKLOQAEER 60
DB 10 PALPDDGGG-APPFGHFDPRKLYCKNGGFFLRHHPDGRVDSVREKSDPHIKLOQAEER 68
OY 61 GVSISIKGCANRYLAMKEDGRLASKCYVDECFEFERLESNNYNTYRSKYSWYALKR 120
DB 69 GVSISIKGCANRYLAMKEDGRLASKCYVDECFEFERLESNNYNTYRSKYSWYALKR 127
OY 121 TGOYKLGKPTGPGOKAILFLPMSAKS 146
DB 128 TGOYKLGKPTGPGOKAILFLPMSAKS 153

RESULT 3
ID Q60487 PRELIMINARY; PRT; 170 AA.
AC Q60487;
DT 01-NOV-1996 (TREMBLrel. 01, Created)
DT 01-MAY-2000 (TREMBLrel. 13, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2 (FGF-2) (FIBROBLAST GROWTH FACTOR, BASIC)
DE (HBGF) (HEPARIN-BINDING GROWTH FACTOR 2) (HBGF-2) (PROSTATROPIN)
DE (PROSTATIC GROWTH FACTOR) (FRAGMENTS).
GN FGF2.

OS Cavia porcellus (Guinea pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Hystriognathi; Cavidae; Cavia.
NCB Taxid=10141;
RN [1]
RP SEQUENCE OF 53-170 FROM N.A.
RC TISSUE=PROSTATE;
RA Ricciardelli C.;
RL Submitted (JAN-1996) to the EMBL/Genbank/DBJ databases.
RP SEQUENCE OF N-TERMINUS, PARTIAL SEQUENCE, AND ALTERNATIVE SPLICING.
RX MEDLINE=89273588; PubMed=2730645;
RA Sommer A., Moscatelli D., Rifkin D.B.;
RT "An amino-terminally extended and post-translationally modified form
RT of a 25kd basic fibroblast growth factor."
RL Biochem. Biophys. Res. Commun. 160:1267-1274(1989).
RN [3]
RP PARTIAL SEQUENCE, AND METHYLATION.
RX MEDLINE=91322114; PubMed=1713785;
RA Burgess W.H., Bizik J., Mehlman T., Quarto N., Rifkin D.B.;
RT "Direct evidence for methylation of arginine residues in high
RT molecular weight forms of basic fibroblast growth factor."
RL Cell Regul. 2:87-93(1991).
RN [4]
RP CHARACTERIZATION.
RC TISSUE=BRAIN.
RX MEDLINE=87289686; PubMed=3475702;
RA Moscatelli D., Joseph-Silverstein J., Manejias R., Rifkin D.B.;
RT "Mr 25,000 heparin-binding protein from guinea pig brain is a high
RT molecular weight form of basic fibroblast growth factor."
RL Proc. Natl. Acad. Sci. U.S.A. 84:5778-5782(1987).
CC -1- FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROTROPHIC
CC FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
CC PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
CC HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOTACTICANT FOR
CC MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
CC PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
CC SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
CC ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
CC -1- SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGFR1 AND AT LEAST
CC ONE HEPARAN SULFATE (BY SIMILARITY).
CC -1- ALTERNATIVE PRODUCTS: AT LEAST TWO ISOFORMS: 18 KDA AND 25 KDA
CC (SHOWN HERE); MAY BE PRODUCED BY USE OF ALTERNATIVE TRANSLATION
CC INITIATION SITES. BOTH FORMS ARE ACTIVE.
CC -1- PRT: THE N-TERMINAL OF ISOFORM 18 KDA IS BLOCKED (PROBABLY).
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC INTRODUCED FROM RESIDUES 77, 88, 93 AND 149 DOWNWARD TO EXTEND THE
CC SIMILARITY TO THE HUMAN SEQUENCE AS WELL AS ON THE BASIS OF
CC PARTIAL AMINO-ACID SEQUENCING.
DR EMBL: L75974; AAB85394.1; ALT_FRAME.
DR HSSP: P09038; IBLA.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; ILIHBGF.
DR PRODOM: PP000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Vascularization; Heparin-binding;
KW Alternative initiation; Methylation; Phosphorylation;
KW Developmental protein.
FT NON_TER 1
FT NON_CONS 15
FT CHAIN 170
FT CHAIN 22
FT INIT_MET 22
FT DOMAIN 11
FT NON_CONS 50
FT SITE 61
FT SITE 103
FT BINDING 50
FT BINDING 105

FT BINDING 143 159 HEPARIN (BY SIMILARITY).
FT MOD_RES 4 4 METHYLATION (MONO- OR DI-).
FT MOD_RES 6 6 METHYLATION (MONO- OR DI-).
FT MOD_RES 8 8 METHYLATION (MONO- OR DI-).
FT MOD_RES 88 88 PHOSPHORYLATION (BY SIMILARITY).
FT MOD_RES 136 136 PHOSPHORYLATION (BY SIMILARITY).
SQ SEQUENCE 170 AA; 18354 MW; F36BDC7365FEBC CRC64;

Query Match 88.8%; Score 699; DB 11; Length 170;
Best Local Similarity 91.1%; Pred. No. 1,le-68;
Matches 133; Conservative 2; Mismatches 5; Indels 6; Gaps 1;

QY 1 PALPDDGGGAPPPGHFDPKRLCYCKNGFFLRHPDGRVGVREKSDPHIKLOQAER 60
DB 31 PALPDDGGGAPPPGHFDPKRLCYCKNGFFLRHPDGRVGVREKSDPHIKLOQAER 84
QY 61 GVSISIKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 120
DB 85 GVSISIKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 144
QY 121 TGOYKLGPKTGPGRKAILFLPMSAKS 146
DB 145 TGOYKLGSKTGPGRKAILFLPMSAKS 170

RESULT 4
07767 PRELIMINARY; PRT; 130 AA.
AC 07767;
DT 01-NOV-1998 (TREMBLrel. 08, Created)
DT 01-NOV-1998 (TREMBLrel. 08, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (BFGF) (FGF-2) (HEPARIN-BINDING GROWTH FACTOR 2) (HGF-2) (PROSTATROPIN) (PROSTATIC GROWTH FACTOR) (FRAGMENT).
OS Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; GN BFGF.
OC Canis familiaris (Dog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
OX NCBI_TaxID=9615;
RN [1]
RP SEQUENCE FROM N.A.
RA Tissue-Adrenal Gland;
RA Trocha O.A., Jacobs R.M., Lamarre J.;
RT "The role of bfgf in canine Hemangiosarcoma."
RL Submitted (APR-1998) to the EMBL/GenBank/DBJ databases.
CC -!- FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROTROPIC FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR MESENCHYME-DERIVED CELLS. IMPLICATED IN THE CENTRAL NERVOUS PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
CC -!- SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGFR1 AND AT LEAST ONE HEPARAN SULFATE (BY SIMILARITY).
CC SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
DR EMBL: AF060562; AAC35912.1; -
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HGF_FGF.
DR InterPro: IPR002348; IL1_HGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HGF.
DR PRODOM: PD000831; HGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HGF_FGF_1.
KW Growth factor; Mitogen; Vascularization; Heparin-binding;
KW Phosphorylation; Developmental protein.
FT NON_TER 1
FT SITE 21 23 CELL ATTACHMENT SITE (POTENTIAL).
FT SITE 63 65 CELL ATTACHMENT SITE (POTENTIAL).
FT BINDING 10 11 HEPARIN (BY SIMILARITY).

FT BINDING 65 65 HEPARIN (BY SIMILARITY).
FT BINDING 103 119 HEPARIN (BY SIMILARITY).
FT MOD_RES 48 48 PHOSPHORYLATION (BY SIMILARITY).
FT MOD_RES 96 96 PHOSPHORYLATION (BY SIMILARITY).
FT NON_TER 130 130
SQ SEQUENCE 130 AA; 14902 MW; 2190876E878FAEA CRC64;

Query Match 88.1%; Score 693; DB 6; Length 130;
Best Local Similarity 99.2%; Pred. No. 3,4e-68;
Matches 129; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 17 FKDPKRLCYCKNGFFLRHPDGRVGVREKSDPHIKLOAERGVISIKVCANRYLAM 76
DB 1 FKDPKRLCYCKNGFFLRHPDGRVGVREKSDPHIKLOAERGVISIKVCANRYLAM 60
QY 77 KEDGRLLASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKRIGQYKLGPKTGPGRKA 136
DB 61 KEDGRLLASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKRIGQYKLGPKTGPGRKA 120
QY 137 ILFLPMSAKS 146
DB 121 ILFLPMSAKS 130

RESULT 5
09092 PRELIMINARY; PRT; 155 AA.
AC 09092;
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR-2.
GN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; OC Amphibia; Batrachia; Caudata; Salamandridae; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RA Susaki K., Nakamura K., Chiba C., Saito T.;
RT "Expression of FGF2 during newt retinal development and regeneration."
RT Submitted (JUL-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL: AB064664; BAB63249.1; -
SQ SEQUENCE 155 AA; 17278 MW; 2B583058538AB8D9 CRC64;

Query Match 84.5%; Score 665; DB 13; Length 155;
Best Local Similarity 85.6%; Pred. No. 5e-65;
Matches 125; Conservative 7; Mismatches 14; Indels 0; Gaps 0;

QY 1 PALPDDGGGAPPPGHFDPKRLCYCKNGFFLRHPDGRVGVREKSDPHIKLOQAER 60
DB 10 PALPDDGGGAPPPGHFDPKRLCYCKNGFFLRHPDGRVGVREKSDPHIKLOQAER 69
QY 61 GVSISIKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 120
DB 70 GVSISIKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 129
QY 121 TGOYKLGPKTGPGRKAILFLPMSAKS 146
DB 130 TGOYKLGSKTGPGRKAILFLPMSAKS 155

RESULT 6
09BDX1 PRELIMINARY; PRT; 111 AA.
AC 09BDX1;
DT 01-JUN-2001 (TREMBLrel. 17, Created)
DT 01-JUN-2001 (TREMBLrel. 17, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).

OS Macaca mulatta (Rhesus macaque).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecidae; Macaca.
OX NCBI_TaxID=9544;
RN [1]
RP SEQUENCE FROM N.A.
RA Sekhon H.S., Keller J.K., Spindel E.R.;
RT "Alterations in Collagen and Elastin Gene Expression in Fetal
RT Pulmonary Vessels in Monkeys Following Prenatal Nicotine Exposure: A
RT Possible Role of alpha7 Nicotinic Acetylcholine Receptor in Persistent
RT Pulmonary Hypertension".
RL Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF251270; AAK37962.1; -.
DR HSSP; P09038; 2EGF.
DR InterPro; IPR002209; HBG_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILLHBGF.
DR ProDom; PD000831; HBG_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBG_FGF; 1.
FT NON_TER 1 1
FT 111 111
SQ SEQUENCE 111 AA; 12633 MW; EC0967A5261F5487 CRC64;

Query Match 73.2%; Score 576; DB 6; Length 111;
Best Local Similarity 98.2%; Pred. No. 1.8e-55;
Matches 109; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 34 IHPDGRVDCVREKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGRLLASKCVTDEC 93
DB 1 IHPDGRVDCVREKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGRLLASKCVTDEC 60
OY 94 FFERLESNNNTYRSKRYSYVALKRTGYKLGPKTGGOKAILFLPMSA 144
DB 61 FFERLESNNNTYRSKRYSYVALKRTGYKLGPKTGGOKAILFLPMSA 111

RESULT 7
O9N1S7 PRELIMINARY; PRT; 108 AA.
AC O9N1S7.
DT 01-OCT-2000 (TREMBLrel. 15, Created)
DT 01-OCT-2000 (TREMBLrel. 15, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN BFGF.
OS Capreolus capreolus (Roe deer).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervidae;
OC Cervidae; Odocoileinae; Capreolus.
OX NCBI_TaxID=9858;
RN [1]
RP SEQUENCE FROM N.A.
RA Wagner A., Blotner S., Goritz F., Fickel J.;
RT "Detection of growth factors in the testis of roe deer (Capreolus
RT capreolus)".
RL Anlin. Reprod. Sci. 64:65-75(2000).
DR EMBL; AF152587; AAF73226.1; -.
DR HSSP; P09038; 4EGF.
DR InterPro; IPR002209; HBG_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILLHBGF.
DR ProDom; PD000831; HBG_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBG_FGF; 1.
FT NON_TER 1 1
FT 108 108

SO SEQUENCE 108 AA; 12399 MW; 6BC7B7244214567E CRC64;
Query Match 72.7%; Score 572; DB 6; Length 108;
Best Local Similarity 100.0%; Pred. No. 4.9e-55;
Matches 108; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 33 RIHPDGRVDCVREKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGRLLASKCVTDEC 92
DB 1 RIHPDGRVDCVREKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGRLLASKCVTDEC 60
OY 93 FFERLESNNNTYRSKRYSYVALKRTGYKLGPKTGGOKAILFL 140
DB 61 FFERLESNNNTYRSKRYSYVALKRTGYKLGPKTGGOKAILFL 108

RESULT 8
O98TD8 PRELIMINARY; PRT; 125 AA.
AC O98TD8.
DT 01-JUN-2001 (TREMBLrel. 17, Created)
DT 01-JUN-2001 (TREMBLrel. 17, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR-2 (FRAGMENT).
GN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RA Mizuno N., Hayashi T., Kondoh H., Okamoto M.;
RT "Cynops fibroblast growth factor-2".
RT Submitted (OCT-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB049625; BAB40835.1; -.
DR HSSP; P09038; 1BFG.
DR InterPro; IPR002209; HBG_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILLHBGF.
DR ProDom; PD000831; HBG_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBG_FGF; 1.
FT NON_TER 1 1
FT 125 125
SQ SEQUENCE 125 AA; 14244 MW; 5C27F41DC6E60C13 CRC64;

Query Match 71.8%; Score 565; DB 13; Length 125;
Best Local Similarity 87.1%; Pred. No. 3.4e-54;
Matches 108; Conservative 6; Mismatches 10; Indels 0; Gaps 0;

OY 23 LYCKNGGFELRIHPDGRVDCVREKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGR 82
DB 2 LYCKNGGFELRIHPDGRVDCVREKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGR 61
OY 83 LASKCVTDECFFERLESNNNTYRSKRYSYVALKRTGYKLGPKTGGOKAILFLP 142
DB 62 MALKWITDECFFERLESNNNTYRSKRYSYVALKRTGYKLGPKTGGOKAILFLP 121
OY 143 SAKS 146
DB 122 SAKS 125
RESULT 9
O925A1 PRELIMINARY; PRT; 109 AA.
AC O925A1.
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.


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OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RA Dirks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RL expressed in mouse embryos.";
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL; AY027558; AAK52310.1; -.
SQ SEQUENCE 109 AA; 12388 MM; 61074ADE303C860 CRC64;

Query Match          62.0%; Score 488; DB 11; Length 109;
Best Local Similarity 97.9%; Pred. No. 7.8e-46;
Matches 94; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 51 IKLOQAERGVSIGVCANRYLAKMEDGRLLASKCVTDECFEERLESNNYNTYRSRK 110
    |||||
DB 14 IKLOQAERGVSIGVCANRYLAKMEDGRLLASKCVTECEFFERLESNNYNTYRSRK 73
    |||||

OY 111 YSWYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 146
    |||||
DB 74 YSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 109
    |||||

RESULT 10
OY 0925A2 PRELIMINARY; PRT; 112 AA.
AC 0925A2;
DT 01-DEC-2001 (TREMBlrel. 19, Created)
DT 01-DEC-2001 (TREMBlrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RA Dirks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RL expressed in mouse embryos.";
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL; AY027557; AAK52309.1; -.
SQ SEQUENCE 112 AA; 12725 MM; B00557ABE0257CGB CRC64;

Query Match          61.5%; Score 484; DB 11; Length 112;
Best Local Similarity 97.9%; Pred. No. 2.2e-45;
Matches 93; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 52 KLOQAERGVSIGVCANRYLAKMEDGRLLASKCVTDECFEERLESNNYNTYRSRK 111
    |||||
DB 18 KLOQAERGVSIGVCANRYLAKMEDGRLLASKCVTECEFFERLESNNYNTYRSRK 77
    |||||

OY 112 SSWYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 146
    |||||
DB 78 SSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 112
    |||||

RESULT 11
ID 007659 PRELIMINARY; PRT; 146 AA.
AC 007659;
DT 01-NOV-1996 (TREMBlrel. 01, Created)
DT 01-NOV-1996 (TREMBlrel. 01, Last sequence update)
DT 01-JUN-2001 (TREMBlrel. 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR.
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GN BFGF.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OX Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=93246053; PubMed=7683281;
RA Borja A.Z., Zeller R., Meijers C.;
RT "Expression of alternatively spliced bFGF first coding exons and
RT antisense mRNAs during chicken embryogenesis.";
RL Dev. Biol. 157:110-118(1993).
RN [2]
RP SEQUENCE OF 52-85 FROM N.A.
RX MEDLINE=90382254; PubMed=2401202;
RA Mitrani E., Gruenbaum Y., Shohat H., Ziv T.;
RT "Fibroblast growth factor during mesoderm induction in the early chick
RT embryo.";
RT Development 109:387-393(1990).
DR EMBL; M95706; AAA48616.1; -.
DR EMBL; X56804; CAA40139.1; -.
DR HSSP; P09038; 2BRH.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
SQ SEQUENCE 146 AA; 16182 MM; A7CB97BCB456E247 CRC64;

Query Match          60.9%; Score 479.5; DB 13; Length 146;
Best Local Similarity 67.1%; Pred. No. 9.7e-45;
Matches 98; Conservative 7; Mismatches 14; Indels 27; Gaps 2;

OY 1 PALPDGSGGAFPPGPHFDPKRLYCKNGGFELRIHPDGRVDGVRKSPHIKLOQAER 60
    :|:|:|
DB 28 PSLSPDGV-----IMERVPRDERVSM-----VKLOQAER 60
    :|:|:|

OY 61 GVVSITKVCANRYLAKMEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
    |||||
DB 61 GVVSITKVCANRYLAKMEDGRLLAKCATCECFEERLESNNYNTYRSKYSWYVALKR 120
    |||||

OY 121 TGOYKLPKTPGPGOKAILFLPMSAKS 146
    |||||
DB 121 TGOYKLPKTPGPGOKAILFLPMSAKS 146
    |||||

RESULT 12
ID P79706 PRELIMINARY; PRT; 101 AA.
AC P79706;
DT 01-MAY-1997 (TREMBlrel. 03, Created)
DT 01-MAY-1997 (TREMBlrel. 03, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE BASIC FGF (FRAGMENT).
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandridae; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=EMBRYO;
RA Suzuki A.S., Tabata T., Sakaguchi K., Takabatake T., Takeshima K.,
RA Kaneda T.;
RT "Serial expression of the genes in a mesodermalizing ectoderms of
RT early Cynops gastrula.";
RL Submitted (NOV-1996) to the EMBL/GenBank/DBJ databases.
DR EMBL; D89443; BAA13958.1; -.
DR HSSP; P09038; 4EGF.
DR InterPro; IPR002209; HBGF_FGF.
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DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF_1.
 DR PRINTS: PR00262; IL1HBGF.
 DR PRODOM: PD000831; HBGF_FGF_1.
 DR SMART: SM00442; FGF_1.
 DR PROSITE: PS00247; HBGF_FGF_1.
 FT NON_TER 1
 FT NON_TER 101
 SQ SEQUENCE 101 AA; 11907 MW; 74A16C866C1F457A CRC64;

Query Match 60.9%; Score 479; DB 13; Length 101;
 Best Local Similarity 88.1%; Pred. NO. 6.9e-45;
 Matches 89; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

OY 20 PRLCYCKNGGFLRLHPGKRVGVREKSDPHIKILOAERGVSIGVCANRYLAMKD 79
 DB 1 PRLCYCKNGGFLRLINSOGKVDAREKSDYIKILOAERGVSIGVCANRYLAMMD 60
 OY 80 GRLASKCVTDECFEERLESNNYTSRKYSSWYALKR 120
 DB 61 GRLMALKWITDECFEERLESNNYTSRKYSSWYALKR 101

RESULT 13
 O9NOV2 PRELIMINARY; PRT; 76 AA.

AC O9NOV2:
 DT 01-OCT-2000 (TREMBLrel. 15, Created)
 DT 01-OCT-2000 (TREMBLrel. 15, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
 GN FGF-2.
 OS Ovis aries (Sheep).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
 OC Bovidae; Caprinae; Ovis.
 OX NCBI_TaxID=9940;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE-FETAL PLACENTAL ARTERY;
 RA Zhang J., Tsol S.C., Magness R.R.;
 RT "Growth factor expression in ovine fetal placental artery endothelial
 cells".
 RL Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AF250027; AAF65566.1; -.
 DR HSSP: P09038; 4FGF.
 DR InterPro: IPR002309; HBGF_FGF.
 DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF_1.
 DR PRINTS: PR00262; IL1HBGF.
 DR PRODOM: PD000831; HBGF_FGF_1.
 DR SMART: SM00442; FGF_1.
 DR PROSITE: PS00247; HBGF_FGF_1.
 FT NON_TER 1
 FT NON_TER 76
 SQ SEQUENCE 76 AA; 8796 MW; 7D984E2F97453B20 CRC64;

Query Match 43.5%; Score 342; DB 6; Length 76;
 Best Local Similarity 100.0%; Pred. NO. 4.9e-30;
 Matches 65; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 48 DPHIKILOAERGVSIGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYTR 107
 DB 1 DPHIKILOAERGVSIGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYTR 60
 OY 108 SRKYS 112
 DB 61 SRKYS 65

RESULT 14

O9NIS8 PRELIMINARY; PRT; 106 AA.
 AC O9NIS8:
 DT 01-OCT-2000 (TREMBLrel. 15, Created)
 DT 01-OCT-2000 (TREMBLrel. 15, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE ACIDIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
 GN AFGF.
 OS Capreolus capreolus (Roe deer).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervidae;
 OC Cervidae; Odocoileinae; Capreolus.
 OX NCBI_TaxID=9858;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE-TESTIS.
 RX MEDLINE-20532861; PubMed=11078967;
 RA Wagener A., Blotner S., Goritz F., Fickel J.;
 RT "Detection of growth factors in the testis of roe deer (Capreolus
 capreolus)".
 RL Anim. Reprod. Sci. 64:65-75(2000).
 DR EMBL: AF152586; AAF73225.1; -.
 DR HSSP: P05230; 2AFG.
 DR InterPro: IPR002309; HBGF_FGF.
 DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF_1.
 DR PRINTS: PR00262; IL1HBGF.
 DR PRODOM: PD000831; HBGF_FGF_1.
 DR SMART: SM00442; FGF_1.
 DR PROSITE: PS00247; HBGF_FGF_1.
 FT NON_TER 1
 FT NON_TER 106
 SQ SEQUENCE 106 AA; 11931 MW; 2EEC9C1D749A5023 CRC64;

Query Match 38.1%; Score 300; DB 6; Length 106;
 Best Local Similarity 53.8%; Pred. NO. 3e-25;
 Matches 57; Conservative 16; Mismatches 31; Indels 2; Gaps 1;

OY 25 CRNGGFLRLHPDGRVGVREKSDPHIKILOAERGVSIGVCANRYLAMKEDGRLA 84
 DB 1 CRNGGFLRLHPDGRVGVREKSDPHIKILOAERGVSIGVCANRYLAMKEDGRLA 60
 OY 85 SKCVTDECFEERLESNNYTSRKYSSWYALKRGTGKLP 128
 DB 61 SQTPEECFLERIEHNHYTSRKYKMFVGLKNGSSKLP 106

RESULT 15
 O00527 PRELIMINARY; PRT; 114 AA.

AC O00527:
 DT 01-JAN-1998 (TREMBLrel. 05, Created)
 DT 01-JAN-1999 (TREMBLrel. 09, Last sequence update)
 DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
 DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
 GN FGF-2 OR FGF2.
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE-BLOOD;
 RA Handschug K., Glaeser C.;
 RT "Polymorphism in the 5' untranslated region of the FGF-2 gene: C to T
 transition (79 bp upstream of the first CUG codon).";
 RL Submitted (May-1997) to the EMBL/GenBank/DBJ databases.
 RN [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE-BLOOD;
 RA Handschug K., Archouk E., Glaeser C.;
 RT "Mutations in the 5' untranslated region of the FGF-2 gene: transition

RT G to A on position 19 and transversion G to C on position 97.";
 RL Submitted (NOV-1999) to the EMBL/GenBank/DBJ databases.
 DR EMBL; Y13468; CAAT73868.1; -.
 DR EMBL; AJ250952; CAB6190.1; -.
 DR HSSP; P09038; 1BF.
 DR InterPro; IPR002209; HBGF_FGF.
 DR Pfam; PF00167; FGF; 1.
 DR ProDom; PD000831; HBGF_FGF; 1.
 FT NON TER 114
 SQ SEQUENCE 114 AA; 1168 MW; 98DC6381C1960C1D CRC64;

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GenCore version 4.5
Copyright (c) 1993 - 2000 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: June 7, 2002, 14:35:39 ; Search time 93.91 Seconds
(Without alignments)
172.684 Million cell updates/sec

Title: US-09-802-365-4

Perfect score: 785
Sequence: 1 PALPEDGGSGAFPFGHFKDP.....GSKTGPCKGKAILFLPMASAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 111073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :

A_Geneseq_032802:*

1: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1980.DAT:*
2: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1981.DAT:*
3: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1982.DAT:*
4: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1983.DAT:*
5: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1984.DAT:*
6: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1985.DAT:*
7: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1986.DAT:*
8: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1987.DAT:*
9: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1988.DAT:*
10: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1989.DAT:*
11: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1990.DAT:*
12: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1991.DAT:*
13: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1992.DAT:*
14: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1993.DAT:*
15: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1994.DAT:*
16: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1995.DAT:*
17: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1996.DAT:*
18: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1997.DAT:*
19: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1998.DAT:*
20: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1999.DAT:*
21: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA2000.DAT:*
22: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA2001.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	785	100.0	146	9 AAP82579	Human basic fibrob
2	785	100.0	146	13 AAR25423	bFGF derivative.
3	785	100.0	146	21 AAY87847	Human FGF-2 protei
4	785	100.0	146	22 AAE11974	Human fibroblast g
5	785	100.0	146	22 AAG62612	Human basic Insuli
6	785	100.0	148	13 AAR22233	bFGF truncated at
7	785	100.0	153	16 AAR71414	Human basic fibrob
8	785	100.0	154	17 AAR89473	Human basic fibrob
9	785	100.0	155	8 AAP70301	Sequence of human
10	785	100.0	155	10 AAP94038	Human basic fibrob

12	785	100.0	155	11 AAR05314	Human basic fibrob
13	785	100.0	155	13 AAR22232	bFGF truncated at
14	785	100.0	155	14 AAR40159	Human bFGF peptide
15	785	100.0	155	15 AAR53270	glu3,5 hbrGF Hom
16	785	100.0	155	16 AAR80777	Fibroblast growth
17	785	100.0	155	16 AAR70204	Human bFGF. Homo
18	785	100.0	155	16 AAR70823	FGF-2. Homo sapie
19	785	100.0	155	18 AAW33338	Human fibronectin
20	785	100.0	155	18 AAW19595	Biologically activ
21	785	100.0	155	19 AAY05456	Fibronectin recept
22	785	100.0	155	19 AAW75712	Fibroblast growth
23	785	100.0	155	19 AAW71386	SVV mutant of fib
24	785	100.0	155	19 AAW71379	18 kDa form of fib
25	785	100.0	155	19 AAW53023	Fibroblast growth
26	785	100.0	155	20 AAW93380	18 kD isoform of h
27	785	100.0	155	21 AAR10298	Fibroblast growth
28	785	100.0	155	21 AAY96873	Human fibroblast g
29	785	100.0	155	21 AAY96885	Human fibroblast g
30	785	100.0	155	21 AAY96893	Human fibroblast g
31	785	100.0	155	21 AAY90411	FGF-2 (bFGF), SEQ
32	785	100.0	155	21 AAY90448	Human FGF-2 (bFGF)
33	785	100.0	155	21 AAY32334	Human fibroblast g
34	785	100.0	155	22 AAG65648	Human fibroblast g
35	785	100.0	155	22 AAE11976	Human fibroblast g
36	785	100.0	155	22 AAB85813	Human fibroblast g
37	785	100.0	155	22 AAB99918	Human FGF-2 protei
38	785	100.0	155	22 AAG64317	Human FGF-2 protei
39	785	100.0	155	22 AAG64847	Heart muscle cell
40	785	100.0	155	22 AAB84597	Amino acid sequenc
41	785	100.0	155	22 AAY72909	Truncated form of
42	785	100.0	155	22 AAB61662	FGF2 protein. Hom
43	785	100.0	155	22 AAB50274	Human basic fibrob
44	785	100.0	157	8 AAP71085	Sequence of human
45	785	100.0	158	18 AAW31664	Leaderless protein

ALIGNMENTS

RESULT 1	
ID AAP82579	standard; protein; 146 AA.
XX	
AC AAP82579;	
XX	
DT 02-NOV-1990	(first entry)
XX	
DE Human basic fibroblast growth factor.	
XX	
KM Basic fibroblast growth factor; anticancer agent; bFGF.	
XX	
OS Homo sapiens.	
XX	
PN EP288687-A.	
XX	
PD 02-NOV-1988.	
XX	
PF 01-MAR-1988;	88EP-0103047.
XX	
PR 03-MAR-1987;	87JP-0049759.
PR 26-AUG-1987;	87JP-0211599.
XX	
PR 26-JAN-1988;	88JP-0016260.
XX	
PA (TAKE) TAKEDA CHEMICAL IND KK.	
XX	
PI Iwane M, Kurokawa T, Igarashi K;	
XX	
DR WPI; 1988-308739/44.	
DR N-PSDB; AAN82192.	
XX	
PT New monoclonal antibodies specific for basic fibroblast growth	
XX	
factor - used in immunoassay, purificn. and as anticancer agent.	

English.

protein was isolated from a cDNA library prep.
human foreskin derived primary culture cell. It
produce recombinant hBFGF for prodn. of Mabs
5F (do not cross react with acidic FGF). High
also useful for promoting healing of burns and
wounds and, due to its neovascularising action, to treat thrombosis
and arteriosclerosis.
See also AAN82193 and AAN82194.

CC Sequence 146 AA;

Query Match 100.0%; Score 785; DB 9; Length 146;

Best Local Similarity 100.0%; Pred. No. 1.5e-75;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGSGAFPPGHEKPKRLYCKNGFPLRIHPDGRVDGVRKSDPHIKLOLAEEER 60

1 palpedgsgafppghfkdprkrllyckngfflrihpdgrvdgvreksdphiklqlgaeeer 60

QY 61 GVVSIKGVCANRYLAMKEDGRILASKCVTDECFEERLESNNYNTYRSRKYTSWYVALKR 120

61 gvvsikgvcanrylamkedgrilaskcvtdcefferlesnnyntyrskylswyvalkr 120

QY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146

121 tgqyklgsktgpqkailflpmsaks 146

Db 121 tgqyklgsktgpqkailflpmsaks 146

Db

RESULT 2

AAR25423

AC AAR25423;

DT 06-JAN-1993 (first entry)

DE bFGF derivative.

KW Human; basic fibroblast growth factor; recombinant; wound healing;

OS Homo sapiens.

Key Location/Qualifiers

FT Modified-site 69 /note= "derivatised with an agent capable of forming

FT Modified-site 89 a covalent S-C bond with Cys"

FT /note= "derivatised with an agent capable of forming a covalent S-C bond with Cys"

PN EP494664-A.

PD 15-JUL-1992.

PF 09-JAN-1992; 92EP-0100257.

PR 09-JAN-1991; 91GB-0000381.

PA (FARM) FARMITALIA ERBA SRL CARLO.

PI Bertolero F, Caccia P, Caulet G, Nitil G;

DR WPI; 1992-235730/29.

XX

PT Derived basic fibroblast growth factor - for treating ulcers,

PT regenerating damaged neural tissue, aiding tissue transplant or

PT bone graft and revascularising ischaemic tissue

PS Claim 2; Page 3; 20pp; English.

XX The sequence is that of a recombinant human basic fibroblast growth

CC factor which has at least on of the four cysteine residues (pref.

CC Cys 69 and Cys 87) derivatised with an agent able to form a covalent

CC S-C bond with Cys. Typical agents include iodoacetic acid.

CC halocetamide, alkali tetrathionates, alkyl methanethiosulphonates

CC and 1-6C alkylsulphonates. The derivatised bFGF is used to accelerate

CC the healing of wounds (including burns, ulcers, transplants, and

CC bone grafts), to revascularise ischaemic tissue or to regenerate

CC damaged neural tissue. Compared with native bFGF the recombinant

CC derivatised bFGF has better biological activity and stability (esp.

CC not aggregating by dimer formation) and is also easier to isolate.

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Claim 1; Page 56-57; 67pp; English.

This invention describes a novel unit dose (I), of fibroblast growth

CC factor (FGF) comprising 0.008-6.1 mg of a mammalian FGF comprising

CC sequence of 140 ((II) and (III)), 146 ((IV) and (V)), 205 (VI), 286

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
OY 1 PALPEDGSGAPPGHFKDPKRLYCKNGGFEFLRHPDGRVDSVREKSDPHIKLOQAER 60
    |||
Db 8 palpedgsgaifpgfhfkdpkrllycknggfflrlhpdgvdgvrksdpbhiklqjaeer 67
OY 61 GVSISIKGCANRYLAMKEDGRLLASKCVYDECFEERLESNNYNTYRSRKYTSWYVALKR 120
    |||
Db 68 gvsiskgvcanylamkedgrllaskcvrdecffierlesnnyntyrskyswvalkr 127
OY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146
    |||
Db 128 tgqyklgsktgpqkailflpmsaks 153
```

RESULT 8

AA071413 ID AAR71413 standard; protein; 154 AA.

AA071413; AC

DT 18-OCT-1995 (first entry)

DE Human basic fibroblast growth factor.

KW basic fibroblast growth factor; bFGF; homo sapiens; human; gel;
KW periodontal disease; regeneration; re-attachment; bone; membrane;
KW cementum; dentine.

OS Homo sapiens.

PN W09505840-A.

PD 02-MAR-1995.

PF 25-AUG-1993; 93WO-JP01211.

PR 25-AUG-1993; 93WO-JP01211.

PA (KAKE) KAKEN PHARM CO LTD.

PI Amakawa M, Asano T, Nakano Y, Saga K, Sugimoto H;

PI Terashima A;

DR WPI; 1995-106672/14.

PT Dental treatment containing basic fibroblast growth factor - for
PT treating periodontal disease and promoting implant fixation and
PT dentine regeneration

PS Claim 7; Page 18; 35pp; Japanese.

CC This is a basic fibroblast growth factor (bFGF) of human origin. It
CC is used in a compsn. to treat periodontal disease. The compsn.
CC promotes regeneration an re-attachment of the bone of the tooth

CC socket, the periodontal membrane and the cementum and regeneration
CC of dentine. The bFGF may be prepd. by recombinant methods, and is
CC pref. formulated in a gel for application to the affected area.

XX SQ Sequence 154 AA;

Query Match 100.0%; Score 785; DB 16; Length 154;

Best Local Similarity 100.0%; Pred. No. 1,6e-75;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
OY 1 PALPEDGSGAPPGHFKDPKRLYCKNGGFEFLRHPDGRVDSVREKSDPHIKLOQAER 60
    |||
Db 9 palpedgsgaifpgfhfkdpkrllycknggfflrlhpdgvdgvrksdpbhiklqjaeer 68
OY 61 GVSISIKGCANRYLAMKEDGRLLASKCVYDECFEERLESNNYNTYRSRKYTSWYVALKR 120
    |||
Db 69 gvsiskgvcanylamkedgrllaskcvrdecffierlesnnyntyrskyswvalkr 128
```

```
OY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146
    |||
Db 129 tgqyklgsktgpqkailflpmsaks 154
```

RESULT 9

AA089473 ID AAR89473 standard; protein; 154 AA.

AA089473; AC

DT 08-AUG-1996 (first entry)

DE Human basic fibroblast growth factor.

KW Human; basic fibroblast growth factor; bFGF; oral mucosal disease; mouth;
KW stomatitis; inflammation; chemotherapy; radioactive treatment; deletion.
KW Homo sapiens.

OS Homo sapiens.

PN JP08027024-A.

PD 30-JAN-1996.

PF 12-JUL-1994; 94JP-0182791.

PR 12-JUL-1994; 94JP-0182791.

PA (KAKE) KAKEN PHARM CO LTD.

PI WPI; 1996-136204/14.

PT Agent for treating oral mucosa diseases - contg. basic fibroblast

PT growth factor as active component, where diseases are caused by

PT chemotherapy or radioactive treatment

PS Disclosure; Page 7; 8pp; Japanese.

CC This is the amino acid of the human basic fibroblast growth factor used
CC in a novel method of treating oral mucosal disease esp. stomatitis and
CC mucosal inflammation caused by chemotherapy or by radioactive treatment.

CC The same protein lacking the N-terminal Ala can also be used in the
CC treatment.

XX SQ Sequence 154 AA;

Query Match 100.0%; Score 785; DB 17; Length 154;

Best Local Similarity 100.0%; Pred. No. 1,6e-75;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
OY 1 PALPEDGSGAPPGHFKDPKRLYCKNGGFEFLRHPDGRVDSVREKSDPHIKLOQAER 60
    |||
Db 9 palpedgsgaifpgfhfkdpkrllycknggfflrlhpdgvdgvrksdpbhiklqjaeer 68
OY 61 GVSISIKGCANRYLAMKEDGRLLASKCVYDECFEERLESNNYNTYRSRKYTSWYVALKR 120
    |||
Db 69 gvsiskgvcanylamkedgrllaskcvrdecffierlesnnyntyrskyswvalkr 128
OY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146
    |||
Db 129 tgqyklgsktgpqkailflpmsaks 154
```

RESULT 10

AA070301 ID AAP70301 standard; protein; 155 AA.

XX

AC	AAP70301.
XX	(first entry)
DT	05-JUN-1991
DE	Sequence of human basic fibroblast growth factor (hbFGF).
XX	Fibroblast growth promoter; mesoderm cell growth promoter;
KM	wound healing.
XW	Homo sapiens.
OS	
XX	Key Location/Qualifiers
FH	Peptide 1..9
FT	Protein 10..155
FT	/note= "claimed"
XX	EP237966-A.
PN	
PD	23-SEP-1987.
XX	
PF	12-MAR-1987; 87EP-0103601.
XX	
PR	29-SEP-1986; 86JP-0231428.
PR	14-MAR-1986; 86JP-0057919.
PR	09-APR-1986; 86JP-0082699.
PR	09-OCT-1986; 86JP-0241053.
PA	(TAKE) TAKEDA CHEMICAL IND KK.
PI	Kurokawa T, Sasada R, Iwane M, Igashashi K;
XX	WPJ: 1987-265363/38.
DR	N-PSTDB: AAN70494.
XX	
PT	Human basic fibroblast growth factor - produced by recombinant DNA techniques, useful for healing wounds, prophylaxis,
PT	thrombosis and arteriosclerosis treatment, etc.
XX	
PS	Disclosure: Fig 1; 38pp: English.
CC	hbFGF is produced using cDNA prep'd from RNA isolated from WI38 or IMR90 human fibroblasts. hbFGF promotes growth of fibroblasts and other mesoderm-derived cells and is useful for promoting healing of wounds (eg burns), for prophylaxis and treatment of thrombosis and arteriosclerosis, and as a promoter for cell culture.
CC	
SQ	Sequence 155 AA:
Query Match	100.0%; Score 785; DB 8; Length 155;
Best Local Similarity	100.0%; Pred. No. 1.6e-75;
Matches 146; Conservative	0; Mismatches 0; Indels 0; Gaps 0.
OY	1 PALPDDGGSGAAPPHFPDCKRLCYKNGGFPLRIHPDGHVGDGVRKSDFHIQLQAEEER 60 Db 10 palpedgsgsaatppphfdpkrlcyknngffilrhpdgvdgdvrekspdhiklqqaer 69
OY	61 GVVSIRGVCANFYLLAMKEDGRILASKCVTDECFFERELESNNYTRSKRYTSWIYAALR 120 Db 70 gvvsitkyvcanylamkedgrillaskcvdecfferlesnnytysrkyswyvalkr 129
OY	121 TGQRYLGSRTGTGOKAILFLPMASAKS 146 Db 130 tggryklgsrtgtgpqkaailflpmasaks 155
RESULT 11	
AAP94038	
ID	AAP94038 standard; protein: 155 AA.
XX	
AC	AAP94038;
XX	
DT	25-JUN-1990 (first entry)

[illegible]

Db 130 tgykylgsktgpqkallflpmsaks 155

RESULT 12

AA05314
ID AAR05314 standard; protein: 155 AA.

XX
AC AAR05314;

XX
DT 10-OCT-1990 (first entry)

XX
DE Human basic fibroblast growth factor (FGF).

XX
KW Fibroblast growth factor; FGF; yeast; ischemia; ds.

XX
OS Synthetic.

XX
PN WO9005184-A.

XX
PD 17-MAY-1990.

XX
PE 03-NOV-1989; 89WO-0004821.

XX
PR 04-NOV-1988; 88US-0267408.

XX
PA (CHIR-) CHIRON CORP.

XX
PI Barr PJ;

XX
DR WPI; 1990-178825/23.

XX
DR N-PSDB; AAQ04716.

XX
PT Yeast prodn. of human basic and acidic fibroblast growth factor -

PT with acetylated amino-terminal, useful eg. for treating cell

XX
PS Senescence; neuronal regression and cell death.

XX
PS Disclosure; ; P; English.

XX
CC FGF have applications such as in vivo nerve regeneration, wound

XX
CC repair ischemia and corneal repair. They may also have therapeutic

XX
CC uses in the CNS and PNS in treatment of cell death and neuronal

XX
CC regression.

XX
SQ Sequence 155 AA;

Query Match 100.0%; Score 785; DB 11; Length 155;

Best Local Similarity 100.0%; Pred. No. 1.6e-75;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGGSGAFPPGHFDPKRLCYCKNGGFRLRHPDGRVDGVREKSDPHIKLOQAEER 60

Db 10 palpedgsgsagfppghfkdprkrlcycknggfflrhpdgrvdgvreksdphiklqgaer 69

QY 61 GVSISIKVCANRYLAMKEDGRLASKCVTDCEFFERLESNNYNTYRSRKYTSWYALKR 120

Db 70 gvsisikvcanrylamkedgrrlaskcvtdcefferlesnnyntyrskylswyalkr 129

QY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146

Db 130 tgykylgsktgpqkailflpmsaks 155

RESULT 13

AA05314
ID AAR22232 standard; protein: 155 AA.

XX
AC AAR22232;

XX
DT 23-JUN-1992 (first entry)

XX
DE bFGF truncated at its N-terminus.

KW Basic fibroblast growth factor; adduct; heparin; heparan sulphate;

XX
KW pepsin A; cathepsin D; wounds; burns.

XX
OS Synthetic.

XX
PN WO9202539-A.

XX
PD 20-FEB-1992.

XX
PE 30-JUL-1991; 91WO-EP01428.

XX
PR 02-AUG-1990; 90GB-0017008.

XX
PA (FARM) FARMITALIA C ERBA SRL.

XX
PI Monsan P, Paul F, Betbeder D, Sarmientos P;

XX
DR WPI; 1992-080021/10.

XX
PT Prepn. of basic fibroblast growth factor - by forming adduct with

XX
PS heparin or heparan sulphate and cleaning with pepsin A or

XX
PS cathepsin D

XX
PS Claim 4; Page 27; 36pp; English.

XX
CC The peptide sequence was deduced from the synthetic DNA sequence

XX
CC prep'd. as described in EP-363675. E. coli cells transformed with the

XX
CC synthetic DNA were lysed and the supernatant purified, giving a

XX
CC 50:50 mixture of a 154 residue bFGF (2-155) having the amino acid

XX
CC sequence of the 155 residue form (Abraham et al., Science, 233, 545-

XX
CC 548, 1986) shown here but without the N-terminal Met; and a 153

XX
CC residue bFGF (3-155). An adduct of bFGF formed with heparin or

XX
CC heparan sulphate contg. the bFGF 9-10 leu-pro bond can be cleaved

XX
CC with pepsin A or cathepsin D to cleave this bond and release a

XX
CC peptide with the N-terminus be deleted up to and including residue

XX
CC 9, sequentially. This cleavage method can be used to obtain a pure

XX
CC form of the 146 amino acid bFGF (10-155) bFGF. The prod. can be used

XX
CC to treat wounds and burns.

XX
CC See also AAR22233.

XX
CC

XX
SQ Sequence 155 AA;

Query Match 100.0%; Score 785; DB 13; Length 155;

Best Local Similarity 100.0%; Pred. No. 1.6e-75;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGGSGAFPPGHFDPKRLCYCKNGGFRLRHPDGRVDGVREKSDPHIKLOQAEER 60

Db 10 palpedgsgsagfppghfkdprkrlcycknggfflrhpdgrvdgvreksdphiklqgaer 69

QY 61 GVSISIKVCANRYLAMKEDGRLASKCVTDCEFFERLESNNYNTYRSRKYTSWYALKR 120

Db 70 gvsisikvcanrylamkedgrrlaskcvtdcefferlesnnyntyrskylswyalkr 129

QY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146

Db 130 tgykylgsktgpqkailflpmsaks 155

RESULT 14

AA05314
ID AAR40159 standard; peptide: 155 AA.

XX
AC AAR40159;

XX
DT 07-FEB-1994 (first entry)

XX
DE Human bFGF peptide fragment #1.

XX
KW Human; fibronectin; FN; fibroblast cell growth factor; FGF;

XX
KW fusion; cell adhesion; cell growth; anti-aging; cosmetics;

XX
KW wound healing; surgery.

XX OS Homo sapiens.
XX PN JP05178897-A.
XX PD 20-JUL-1993.
XX PF 05-MAR-1992; 92JP-0083220.
XX PR 14-OCT-1991; 91JP-0291959.
XX PA (TAKI) TAKARA SHUZO CO LTD.
XX DR WPI: 1993-261656/33.
XX DR N-PSDB: AAQ646943.
XX PT Synthetic functional polypeptide to promote wound healing, etc.
XX PT contg. cell adhesion polypeptide from fibronectin and fibroblast
XX PT growth factor polypeptide, opt. linked by spacer
XX PS Disclosure; Page 7; 13pp; Japanese.
XX CC The sequences given in AAR40158-63 represent human fibronectin (FN)
XX CC and fibroblast cell growth factor (bFGF) fragments which are used in
XX CC the production of fusion polypeptides which are able to stimulate
XX CC cell adhesion and cell growth. These fusion peptides may be used
XX CC for anti-aging cosmetics and in wound healing after surgery.
XX SQ Sequence 155 AA;

Query Match 100.0%; Score 785; DB 14; Length 155;
Best Local Similarity 100.0%; Pred. No. 1.6e-75;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGSGAFPPGHEFDPKRLYCKNGCFRLRHPDGRVDSRSPHKLQQAER 60
Db 10 palpedgsgafppghfdpkrllyckngfflrlhpdgdrvdsrpsphklqlqqaer 69
QY 61 GVVSITKGYCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSRKYTSWYALKR 120
Db 70 gvvsitkgycanrylamkedgrrlaskcvtdcefferlesnnyntyrskytswyvalkr 129
QY 121 TGQYVLGSKTGPQKAILFLPMSAKS 146
Db 130 tgqyvlgsktgpgqkailflpmsaks 155

RESULT 15
AAR53270
ID AAR53270 standard; Protein: 155 AA.
XX AC AAR53270;
XX DT 04-JAN-1995 (first entry)
XX DE glul3,5 hbfGF.
XX KW Recombinant; chimeric; basic fibroblast growth factor; bFGF;
KW glul3,5 FGF; expression; E. coli; stabilisation; disulphide bonds;
KW thio-disulphide interchange; burns; surgical incisions; wound healing;
KW skin ulcers; bed sores; cardiovascular conditions; bone repair;
KW musculoskeletal injuries; neurodegenerative disease.
XX OS Homo sapiens.
XX FT Key Location/Qualifiers
FT MISC-difference 3 /label= Ala3Glu
FT MISC-difference 5 /label= Ser5Glu
XX PN US5310883-A.

XX PD 10-MAY-1994.
XX PF 23-NOV-1990; 90US-0615202.
XX PR 23-NOV-1990; 90US-0615202.
XX PR 04-NOV-1991; 91US-0783694.
XX PA (AMCY) AMERICAN CYANAMID CO.
XX PI Bohlen P, Gluzman Y, Seddon AP;
XX DR WPI: 1994-150500/18.
XX DR N-PSDB: AAQ64582.
XX PT Novel recombinant chimeric fibroblast growth factors - efficiently
XX PT expressed in E.coli, useful for accelerating wound healing
XX PS Claim 3; Column 15-18; 11pp; English.
XX CC The sequences given in AAR53270-71 represent recombinant chimeric basic
XX CC fibroblast growth factors (bFGF). These proteins comprise a basic FGF
XX CC having 155 amino acids in which Ala3 and Ser5 have been replaced by
XX CC Glu, and opt. Cys78 and Cys96 are replaced by Lys, Asp, Glu, Asn, Gln,
XX CC His, Ile, Leu, Val, Phe, Tyr, Met, Thr, Pro, Ala, Gly, Arg, or Trp,
XX CC pref. Ser. The glul3,5 FGF has the mitogenic properties of tissue
XX CC derived bFGF, but expression in E. coli is significantly greater than
XX CC the native sequence, allowing high yield production of the bFGF.
XX CC Replacing Cys78 and Cys96 by Ser causes stabilisation of the growth
XX CC factor by eliminating thio-disulphide interchange. This facilitates
XX CC the purification and enhances the stability of the isolated protein.
XX CC The bFGF have therapeutic applications for healing burns, surgical
XX CC incisions and other wounds, for treating skin ulcers including bed
XX CC sores, for cardiovascular conditions and restarting blood flow after
XX CC heart attacks by revascularising the damaged tissue, for enhancing
XX CC bone repair and treating musculoskeletal injuries, and in neuro-
XX CC degenerative and other disease states.
XX SQ Sequence 155 AA;

Query Match 100.0%; Score 785; DB 15; Length 155;
Best Local Similarity 100.0%; Pred. No. 1.6e-75;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGSGAFPPGHEFDPKRLYCKNGCFRLRHPDGRVDSRSPHKLQQAER 60
Db 10 palpedgsgafppghfdpkrllyckngfflrlhpdgdrvdsrpsphklqlqqaer 69
QY 61 GVVSITKGYCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSRKYTSWYALKR 120
Db 70 gvvsitkgycanrylamkedgrrlaskcvtdcefferlesnnyntyrskytswyvalkr 129
QY 121 TGQYVLGSKTGPQKAILFLPMSAKS 146
Db 130 tgqyvlgsktgpgqkailflpmsaks 155

Search completed: June 7, 2002, 14:35:39
Job time: 276 sec

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:37:15 ; Search time 47.03 Seconds
(Without alignments)
298.300 Million cell updates/sec

Title: US-09-802-365-4

Sequence: 1 PALPDDGGSGAAPPGRFRDP.....GSKTGPCOKAIIPLPMSAKS 146

Scoring table:

BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283138 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	785	100.0	210	2 A32398	basic fibroblast g
2	776	98.9	157	1 GKBOB	basic fibroblast g
3	770	98.1	146	1 S00185	basic fibroblast g
4	761.5	97.0	154	2 A31674	basic fibroblast g
5	756.5	96.4	154	2 C37360	basic fibroblast g
6	738	94.0	137	2 I46711	fibroblast growth
7	723	92.1	189	2 A48834	basic fibroblast g
8	719.5	91.7	164	2 S31622	basic fibroblast g
9	646	82.3	155	1 A40117	basic fibroblast g
10	427.5	54.5	125	2 A32484	basic fibroblast g
11	396	50.4	155	1 A60721	acidic fibroblast
12	386	49.2	155	1 A33655	acidic fibroblast
13	383.5	48.9	155	2 A60130	acidic fibroblast
14	382	48.7	155	2 S04147	acidic fibroblast
15	382	48.7	155	2 D37360	acidic fibroblast
16	380	48.4	152	2 JH0476	acidic fibroblast
17	378	48.2	155	2 JH0055	acidic fibroblast
18	375	47.8	155	1 GKBOA	acidic fibroblast
19	255	32.5	194	2 I50710	fibroblast growth
20	252.5	32.2	256	2 JCA627	fibroblast growth
21	250	31.8	208	2 S14192	fibroblast growth
22	249	31.7	208	2 S20102	fibroblast growth
23	248.5	31.7	206	1 TVH0HS	fibroblast growth
24	248	31.6	220	1 I50588	fibroblast growth
25	245	31.3	206	2 JCA268	fibroblast growth
26	244	30.8	264	2 A36207	fibroblast growth
27	243	30.4	266	2 S68144	fibroblast growth
28	242	30.3	187	2 S23595	embryonic fibroblast
29	241	29.7	237	1 S39582	transforming prote

30	237	30.2	245	1 TWMS72	transforming prote
31	236	30.1	239	1 S04742	fibroblast growth
32	235.5	30.0	202	1 TWMSHS	fibroblast growth
33	234.5	29.9	192	2 S54407	embryonic fibroblast
34	233	29.7	267	1 TVH0FS	fibroblast growth
35	216	27.5	208	2 S66486	fibroblast growth
36	216	27.5	208	2 A48137	fibroblast growth
37	210	26.8	211	2 JC7353	fibroblast growth
38	209.5	26.7	194	2 I48610	keratinocyte growth
39	208	26.5	208	2 JC7082	fibroblast growth
40	207.5	26.4	194	1 A36301	fibroblast somat
41	207.5	26.4	194	2 S26049	fibroblast growth
42	207.5	26.4	194	2 S49501	keratinocyte growth
43	206.5	26.3	207	2 JC5940	fibroblast growth
44	205.5	26.2	207	2 JC5941	fibroblast growth
45	204	26.0	212	2 JC7511	fibroblast growth

ALIGNMENTS

RESULT 1
A32398
basic fibroblast growth factor precursor, 22.5K form - human
N:Alternate names: bFGF; fibroblast growth factor 2; prostatic growth factor; prostatic
N:Contains: basic fibroblast growth factor, 18K form
C:Species: Homo sapiens (man)
C>Date: 31-Jul-1989 #sequence_revision 31-Dec-1993 #text_change 21-Jul-2000
C:Accession: A32398; A61537; A26642; B32878; S00297; A54316; B54316; A33624; A25824;
R:Prats, H.; Kaghad, M.; Prats, A.C.; Klagsbrun, M.; Lelias, J.M.; Lianzun, P.; Chalo
Proc. Natl. Acad. Sci. U.S.A. 86, 1836-1840, 1989
A:Title: High molecular mass forms of basic fibroblast growth factor are initiated by
A:Reference number: A32398; MUID:89184522
A:Accession: A32398
A:Molecule type: mRNA
A:Residues: 1-210 <PRA>
A:Cross-references: GB:J04513; NID:g183083; PIDN:AAA52531.1; PID:g459811
R:Shibata, F.; Baird, A.; Florjanczyk, R.Z.
Growth Factors 4, 277-287, 1991
A:Title: Functional characterization of the human basic fibroblast growth factor gene
A:Reference number: A61537; MUID:92110035
A:Accession: A61537
A:Molecule type: DNA
A:Residues: 1-114 <SHI>
A:Note: authors translated the codon GGA for residue 47 as Ala
R:Kurokawa, T.; Sasada, R.; Iwane, M.; Igarashi, K.
FEBS Lett. 213, 189-194, 1987
A:Title: Cloning and expression of cDNA encoding human basic fibroblast growth factor
A:Reference number: A26642; MUID:87162468
A:Accession: A26642
A:Molecule type: mRNA
A:Residues: 56-210 <KUR>
A:Cross-references: GB:M27968; NID:g182562; PIDN:AAA52448.1; PID:g182563
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Mergia, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organization
A:Reference number: A90924; MUID:87211066
A:Accession: B32878
A:Molecule type: mRNA
A:Residues: 56-210 <ABR>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Mergia, A.; Friedman, J.; Gospodarowicz, D.
EMBO J. 5, 2527-2528, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence and genomic organization
A:Reference number: S00297; MUID:8705817
A:Accession: S00297
A>Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <AB2>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Shimoyama, Y.; Gotch, M.; Ino, Y.; Sakamoto, M.; Kato, K.; Hirohashi, S.
Jpn. J. Cancer Res. 82, 1263-1270, 1991
A:Title: Characterization of high-molecular-mass forms of basic fibroblast growth fac

40UD:92091228

1-91,'X',93-95 <SH3>
hepatocellular carcinoma cell line
on NCBI backbone (NCBI:P:71595)

> <SH2>

on NCBI backbone (NCBI:P:71594)

J. Cell Biol. 109, 3105-3114, 1989

A:Title: Differential effects of heparin, fibronectin, and laminin on the phosphorylation

A:Reference number: A33624; MUID:90078343

A:Accession: A33624

A:Status: preliminary

A:Molecule type: protein

A:Residues: 57-210 <FEI>

R.Story, M.T.; Esch, F.; Shimasaki, S.; Sasse, J.; Jacobs, S.C.; Lawson, R.K.

Biochem. Biophys. Res. Commun. 142, 702-709, 1987

A:Title: Amino-terminal sequence of a large form of basic fibroblast growth factor isolate

A:Accession number: A25824; MUID:87156686

A:Accession: A25824

A:Molecule type: protein

A:Residues: 57-77 <STO>

A:Experimental source: prostate

R.Gomez-Callego, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.

Biochem. Biophys. Res. Commun. 135, 541-548, 1986

A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino terminal

A:Reference number: A90122; MUID:86186784

A:Accession: B24243

A:Molecule type: protein

A:Residues: 65-102,'X',104-105 <GIN>

A:Experimental source: brain

R.Gautschi, P.; Frazer-Schroder, M.; Bohlen, P.

FEBS Lett. 204, 203-207, 1986

A:Title: Partial molecular characterization of endothelial cell mitogens from human brain

A:Reference number: A91364; MUID:86275260

A:Accession: B24301

A:Molecule type: protein

A:Residues: 65-88,'X',90-98,'X',100 <GAN>

R.Sommer, A.; Breuer, M.T.; Thompson, R.C.; Moscatelli, D.; Presta, M.; Rifkin, D.B.

Biochem. Biophys. Res. Commun. 144, 543-550, 1987

A:Title: A form of human basic fibroblast growth factor with an extended amino terminus-

A:Reference number: S42242; MUID:87213238

A:Accession: S42242

A:Status: preliminary

A:Molecule type: mRNA

A:Residues: 54-210 <SOM>

A:Cross-references: EMBL:M17599; NID:9183086; PIDN:AAA52534.1; PID:9183087

R.Pantoliano, M.W.; Horlick, R.A.; Springer, B.A.; Van Dyk, D.E.; Tobery, T.; Wetmore, D.

Biochemistry 33, 10229-10248, 1994

A:Title: Multivalent ligand-receptor binding interactions in the fibroblast growth factor

A:Reference number: A53784; MUID:94347757

A:Accession: B53784

A:Molecule type: protein

A:Residues: 54-71 <PAN>

R.Watson, R.; Anthony, F.; Pickett, M.; Lambden, P.; Masson, G.M.; Thomas, E.J.

Biochem. Biophys. Res. Commun. 187, 1227-1231, 1992

A:Title: Reverse transcription with nested polymerase chain reaction shows expression of

clients.

A:Reference number: I52267; MUID:93038590

A:Accession: I52267

A:Status: preliminary; translated from GB/EMBL/DBJ

A:Molecule type: mRNA

A:Residues: 93-182 <RES>

A:Cross-references: GB:S47380; NID:9256535; PIDN:AAAD13853.1; PID:94261553

A:Experimental source: granulosa cells

R.Petry, V.; Buglier, B.; Amalric, F.; Prome, J.C.; Prats, H.

FEBS Lett. 349, 23-28, 1994

A:Title: Purification and characterization of the 210-amino acid recombinant basic fibro-

A:Reference number: S46353; MUID:94320639

A:Accession: S46253

A:Molecule type: protein

A:Residues: 39-53;65-88 <PAR>

A:Note: recombinant gene expressed in Escherichia coli

C:Genetics:

A:Gene: GDB:FGF2, FGF2

A:Cross-references: GDB:119910; OMIM:134920

A:Map position: 4q25-4q27

A:Start codon: CTG

C:Superfamily: fibroblast growth factor

C:Keywords: alternative initiators; angiogenesis; growth factor; heparin binding; mit

F:1-210/Product: basic fibroblast growth factor, 22.5k form #status predicted <MA2>

F:65-210/Product: basic fibroblast growth factor, 18k form #status predicted <MA2>

F:82-86/Region: heparin binding #status predicted

F:171-174/Region: heparin binding #status predicted

Query Match 100.0%; Score 785; DB 2; Length 210;

Best Local Similarity 100.0%; Pred. No.1.6e-70;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 PALPEDGSGAFPPGHFKDPKRLCYCKNGFPLRHPDGRVDGVREKSDPHIKLQIAER 60

Db 65 PALPEDGSGAFPPGHFKDPKRLCYCKNGFPLRHPDGRVDGVREKSDPHIKLQIAER 124

Qy 61 GVSTIKGVCANRYLAMKEDGRLLASKVTDCEFFERLESNNYTRSRKTTSTVALKR 120

Db 125 GVSTIKGVCANRYLAMKEDGRLLASKVTDCEFFERLESNNYTRSRKTTSTVALKR 184

Qy 121 TGOYKLGSKTGPCKAILFLPMSAKS 146

Db 185 TGOYKLGSKTGPCKAILFLPMSAKS 210

RESULT 2

GKBOB

basic fibroblast growth factor precursor - bovine (fragment)

N:Alternate names: bFGF; kidney-derived growth factor; prostatiotin

C:Species: Bos primigenius taurus (cattle)

C:Date: 13-Aug-1986 #sequence_revision 02-Jun-1995 #text_change 24-Nov-1999

C:Accession: A24663; A32878; A33784; A61550; A60310; A61094; A01386; A60316;

R:Abraham, J.A.; Mergia, A.; Whang, J.L.; Tumbolo, A.; Friedman, J.; Hjerrild, K.A.; G

Science 233, 545-548, 1986

A:Title: Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic

A:Reference number: A94290; MUID:86261806

A:Accession: A24663

A:Molecule type: mRNA

A:Residues: 3-157 <ABR>

A:Cross-references: GB:M13440; NID:9163049; PIDN:AAA30518.1; PID:9163050

A:Experimental source: pituitary gland

R:Abraham, J.A.; Whang, J.L.; Tumbolo, A.; Mergia, A.; Fiddes, J.C.

Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986

A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organizat

A:Reference number: A90924; MUID:87217066

A:Accession: A32878

A:Molecule type: mRNA

A:Residues: 3-157 <AB2>

R:Milner, P.G.; Li, Y.S.; Hoffman, R.M.; Kodner, C.M.; Siegel, N.R.; Deuel, T.F.

Biochem. Biophys. Res. Commun. 165, 1096-1103, 1989

A:Title: A novel 17 kd heparin-binding growth factor (HBGF-8) in bovine uterus: purif

A:Reference number: A33784; MUID:90121211

A:Accession: A33784

A:Molecule type: protein

A:Residues: 1-14 <MIL>

A:Note: demonstration of a possible alternative initiator or splice junction

R:Bertolini, J.; Hearn, M.T.W.

Mol. Cell. Endocrinol. 51, 187-199, 1987

A:Title: Isolation, characterisation and tissue localisation of an N-terminal-truncat

A:Reference number: A61550; MUID:87247652

A:Accession: A61550

A:Molecule type: protein

A:Residues: 16-35 <BER>

R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.

Mol. Cell. Endocrinol. 49, 189-194, 1987
 A:Title: Isolation and partial characterization of basic fibroblast growth factor from h
 A:Reference number: A61551; MUID:87162856
 A:Accession: A61551
 A:Molecule type: protein
 A:Residues: 27-35, 'X', 37-41 <UE3>
 A:Experimental source: testes
 A:Note: This form appears to be identical to the renal form
 R:Ueno, N.; Baird, A.; Esch, F.; Shimasaki, S.; Ling, N.; Guillemin, R.
 Regul. Pept. 16, 135-145, 1986
 A:Title: Purification and partial characterization of a mitogenic factor from bovine liv
 A:Reference number: A60310; MUID:87119155
 A:Accession: A60310
 A:Molecule type: protein
 A:Residues: 23-35, 'X', 37-42 <UEN>
 A:Experimental source: liver
 R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
 Biochem. Biophys. Res. Commun. 138, 580-588, 1986
 A:Title: Isolation of an amino terminal extended form of basic fibroblast growth factor.
 A:Reference number: A24819; MUID:86295737
 A:Contents: annotation
 A:Note: the amino end of this form was blocked; the peptide composition matched what was
 R:Gospodarowicz, D.; Baird, A.; Cheng, J.; Lui, G.M.; Esch, F.; Bohlen, P.
 Endocrinology 118, 82-90, 1986
 A:Title: Isolation of fibroblast growth factor from bovine adrenal gland: physicochemica
 A:Reference number: A61094; MUID:86081530
 A:Accession: A61094
 A:Molecule type: protein
 A:Residues: 12-25, 27-35, 'X', 37-40 <GOS>
 A:Experimental source: adrenal gland
 R:Esch, F.; Baird, A.; Ling, N.; Ueno, N.; Hill, F.; Denoroy, L.; Klepper, R.; Gospodarc
 Proc. Natl. Acad. Sci. U.S.A. 82, 6507-6511, 1985
 A:Title: Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and
 A:Reference number: A01386; MUID:86016731
 A:Accession: A01386
 A:Molecule type: protein
 A:Residues: 12-157 <ESC>
 A:Experimental source: pituitary gland
 R:Baird, A.; Esch, F.; Bohlen, P.; Ling, N.; Gospodarowicz, D.
 Regul. Pept. 12, 201-213, 1985
 A:Title: Isolation and partial characterization of an endothelial cell growth factor fro
 A:Reference number: A60316; MUID:86095426
 A:Accession: A60316
 A:Molecule type: protein
 A:Residues: 27-35, 'X', 37-43 <BAI>
 A:Experimental source: kidney
 R:Bohlen, P.; Baird, A.; Esch, F.; Ling, N.; Gospodarowicz, D.
 Proc. Natl. Acad. Sci. U.S.A. 81, 5364-5368, 1984
 A:Title: Isolation and partial molecular characterization of pituitary fibroblast growt
 A:Reference number: A22054; MUID:84298139
 A:Accession: A22054
 A:Molecule type: protein
 A:Residues: 12-26 <BOH>
 C:Comment: The acidic and basic fibroblast growth factors are the major endothelial-cell
 all types in vitro (although bFGF is 30-100 times more potent than aFGF in stimulating t
 C:Comment: This protein binds heparin more strongly than does aFGF.
 C:Keywords: alternative splicing; angiogenesis; blocked amino end; growth factor; hepari
 C:Superfamily: fibroblast growth factor
 F:1-157/Product: basic fibroblast growth factor, uterine form #status predicted <MAT>
 F:4-157/Product: basic fibroblast growth factor, pituitary gamma form #status experiment
 F:12-157/Product: basic fibroblast growth factor, pituitary alpha form #status experim
 F:16-157/Product: basic fibroblast growth factor, pituitary short form #status predict
 F:23-157/Product: basic fibroblast growth factor, hepatic form #status experimental <MAT
 F:27-157/Product: basic fibroblast growth factor, renal form #status experimental <MAT
 F:29-33, 118-121/Region: heparin binding #status predicted
 F:4/Modified site: blocked amino end (Ala) (in mature form pituitary gamma) (probably ac

Query Match 98.9%; Score 776; DB 1; Length 157;
 Best Local Similarity 98.6%; Pred. No. 9.3e-70;
 Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

1 PALPEDGSGAPPGHFKDPKRLKCKNGGFLRIHPDGRVDSVREKSDPHIKLOQAEEER 60

|||||
 Db 12 PALPEDGSGAPPGHFKDPKRLKCKNGGFLRIHPDGRVDSVREKSDPHIKLOQAEEER 71
 Qy 61 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 120
 |||||||
 Db 72 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 131
 Qy 121 TGQYKLGSKTGPGRKAILFLPMSAKS 146
 |||||||
 Db 132 TGQYKLGSKTGPGRKAILFLPMSAKS 157
 |||||||
 RESULT 3
 S00185
 basic fibroblast growth factor - sheep
 N:Alternate names: prostatiopin
 C:Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
 C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
 C:Accession: S00185
 R:Simpson, R.J.; Moritz, R.L.; Lloyd, C.J.; Fabri, L.J.; Nice, E.C.; Rudira, M.R.; Bu
 FBS Lett. 224, 128-132, 1987
 A:Title: Primary structure of ovine pituitary basic fibroblast growth factor.
 A:Reference number: S00185; MUID:86055577
 A:Accession: S00185
 A:Molecule type: protein
 A:Residues: 1-146 <SIM>
 C:Superfamily: fibroblast growth factor
 C:Keywords: growth factor; heparin binding; mitogen
 F:18-22/Region: heparin binding #status predicted
 F:107-110/Region: heparin binding #status predicted
 Query Match 98.1%; Score 770; DB 1; Length 146;
 Best Local Similarity 97.9%; Pred. No. 3.4e-69;
 Matches 143; Conservative 1; Mismatches 2; Indels 0; Gaps 0;

Qy 1 PALPEDGSGAPPGHFKDPKRLKCKNGGFLRIHPDGRVDSVREKSDPHIKLOQAEEER 60
 |||||||
 Db 1 PALPEDGSGAPPGHFKDPKRLKCKNGGFLRIHPDGRVDSVREKSDPHIKLOQAEEER 60
 Qy 61 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 120
 |||||||
 Db 61 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 120
 Qy 121 TGQYKLGSKTGPGRKAILFLPMSAKS 146
 |||||||
 Db 121 TGQYKLGSKTGPGRKAILFLPMSAKS 146
 |||||||
 RESULT 4
 A31674
 basic fibroblast growth factor precursor - rat
 N:Alternate names: bFGF
 C:Species: Rattus norvegicus (Norway rat)
 C:Date: 21-May-1990 #sequence_revision 21-May-1990 #text_change 16-Jul-1999
 C:Accession: A31674; S00876; S24309
 R:Shimasaki, S.; Emoto, N.; Koba, A.; Mercado, M.; Shibata, F.; Cooksey, K.; Baird, A
 Biochem. Biophys. Res. Commun. 157, 256-263, 1988
 A:Title: Complementary DNA cloning and sequencing of rat ovarian basic fibroblast gro
 A:Reference number: A31674; MUID:89061721
 A:Accession: A31674
 A:Molecule type: mRNA
 A:Residues: 1-154 <SHI>
 A:Cross-references: GB:M2427; NID:g204285; PIDN:AAA41210.1; PID:g204286
 R:Kurokawa, T.; Seno, M.; Igarashi, K.
 Nucleic Acids Res. 16, 5201, 1988
 A:Title: Nucleotide sequence of rat basic fibroblast growth factor cDNA.
 A:Reference number: S00876; MUID:88262516
 A:Accession: S00876
 A:Molecule type: mRNA
 A:Residues: 1-154 <KUR>
 A:Cross-references: EMBL:X07285; NID:g56203; PIDN:CAA30265.1; PID:g56204
 R:El-Husseini, A.E.D.; Paterson, J.A.; Myal, Y.; Shiu, R.P.C.

Biochim. Biophys. Acta 1131, 314-316, 1992
A:Title: PCR detection of the rat brain basic fibroblast growth factor (bFGF) mRNA cont
A:Reference number: S24309; MUID:92329546
A:Accession: S24309
A:Status: preliminary; translation not shown
A:Molecule type: mRNA
A:Residues: 35-154 <EHH>
A:Cross-references: EMBL:X61697; NID:956143; PIDN:CAA43863.1; PID:956144
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor
F:1-9/Domain: signal sequence #status predicted <SIG>
F:10-154/Product: basic fibroblast growth factor #status predicted <MAT>

Query Match 97.0%; Score 761.5; DB 2; Length 154;
Best Local Similarity 97.3%; Pred. No. 2,5e-68;
Matches 142; Conservative 3; Mismatches 0; Indels 1; Gaps 1;
OY 1 PALPDDGSGAPPPGHFKDPKRLKCKNGGFLRIHPDGVGVREKSDPHIKLOLAER 60
|||||
DB 10 PALPDDGGA-APPFGHFKDPKRLKCKNGGFLRIHPDGVGVREKSDPHIKLOLAER 68
OY 61 GVVSTKGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
|||||
DB 69 GVVSTKGVCANRYLAMKEDGRLLASKCVTECFEERLESNNYNTYRSKYSWYVALKR 128
OY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
|||||
DB 129 TGOYKLGSKTGPQKAILFLPMSAKS 154

RESULT 5
C37360
basic fibroblast growth factor - mouse
C:Species: Mus musculus (house mouse)
C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999
C:Accession: C37360
R:Hebert, J.M.; Basillco, C.; Goldfarb, M.; Haub, O.; Martin, G.R.
Dev. Biol. 138, 454-463, 1990
A:Title: Isolation of cDNAs encoding four mouse FGF family members and characterization
A:Reference number: A37360; MUID:90201563
A:Accession: C37360
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-154 <HEB>
A:Cross-references: GB:M30644; NID:9193296; PIDN:AAA37621.1; PID:9309239
C:Superfamily: fibroblast growth factor

Query Match 96.4%; Score 756.5; DB 2; Length 154;
Best Local Similarity 96.6%; Pred. No. 7.8e-68;
Matches 141; Conservative 4; Mismatches 0; Indels 1; Gaps 1;
OY 1 PALPDDGSGAPPPGHFKDPKRLKCKNGGFLRIHPDGVGVREKSDPHIKLOLAER 60
|||||
DB 10 PALPDDGGA-APPFGHFKDPKRLKCKNGGFLRIHPDGVGVREKSDPHIKLOLAER 68
OY 61 GVVSTKGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
|||||
DB 69 GVVSTKGVCANRYLAMKEDGRLLASKCVTECFEERLESNNYNTYRSKYSWYVALKR 128
OY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
|||||
DB 129 TGOYKLGSKTGPQKAILFLPMSAKS 154

RESULT 6
I46711
fibroblast growth factor - rabbit (fragment)
C:Species: Oryctolagus cuniculus (domestic rabbit)
C:Date: 14-Feb-1997 #sequence_revision 14-Feb-1997 #text_change 16-Jul-1999
C:Accession: I46711
R:Winkles, J.A.; Friesel, R.; Alberts, G.F.; Janat, M.F.; Liu, G.

Am. J. Pathol. 143, 518-527, 1993
A:Title: Elevated expression of basic fibroblast growth factor in an immortalized rab
A:Reference number: I46711; MUID:93343209
A:Accession: I46711
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 1-137 <WIN>
A:Cross-references: GB:L12034; NID:9165014; PIDN:AAA31248.1; PID:9165015
C:Superfamily: fibroblast growth factor

Query Match 94.0%; Score 738; DB 2; Length 137;
Best Local Similarity 93.3%; Pred. No. 4.7e-66;
Matches 136; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
OY 1 PALPDDGSGAPPPGHFKDPKRLKCKNGGFLRIHPDGVGVREKSDPHIKLOLAER 60
|||||
DB 1 PALPDDGSGAPPPGHFKDPKRLKCKNGGFLRIHPDGVGVREKSDPHIKLOLAER 60
OY 61 GVVSTKGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
|||||
DB 61 GVVSTKGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
OY 121 TGOYKLGSKTGPQKAI 137
|||||
DB 121 TGOYKLGSKTGPQKAI 137

RESULT 7
A48834
basic fibroblast growth factor - chicken
C:Species: Gallus gallus (chicken)
C:Date: 01-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 16-Jul-1999
C:Accession: A48834; S23636
R:Borja, A.Z.; Meijers, C.; Zeller, R.
Dev. Biol. 157, 110-118, 1993
A:Title: Expression of alternatively spliced bFGF first coding exons and antisense mR
A:Reference number: A48834; MUID:93246053
A:Accession: A48834
A:Status: preliminary
A:Molecule type: nucleic acid
A:Residues: 1-189 <BOR>
A:Experimental source: embryo
A:Note: sequence extracted from NCBI backbone (NCBIN:131000, NCBI:P:131001)
R:Mitrani, E.; Gruenbaum, Y.; Shohat, H.; Ziv, T.
Development 109, 387-393, 1990
A:Title: Fibroblast growth factor during mesoderm induction in the early chick embryo
A:Reference number: S23636; MUID:90382254
A:Accession: S23636
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 95-128 <MIT>
A:Cross-references: EMBL:X56804; NID:962855; PIDN:CAA40139.1; PID:962856
C:Superfamily: fibroblast growth factor

Query Match 92.1%; Score 723; DB 2; Length 189;
Best Local Similarity 91.8%; Pred. No. 2.1e-64;
Matches 134; Conservative 5; Mismatches 7; Indels 0; Gaps 0;
OY 1 PALPDDGSGAPPPGHFKDPKRLKCKNGGFLRIHPDGVGVREKSDPHIKLOLAER 60
|||||
DB 44 PALPDDGSGAPPPGHFKDPKRLKCKNGGFLRIHPDGVGVREKSDPHIKLOLAER 103
OY 61 GVVSTKGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
|||||
DB 104 GVVSTKGVCANRYLAMKEDGRLLALCAATECFEERLESNNYNTYRSKYSWYVALKR 163
OY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
|||||
DB 164 TGOYKRGKTPGPQKAILFLPMSAKS 189

RESULT 8
 S31622
 basic fibroblast growth factor - short-tailed opossum (Monodelphis domestica) (fragment)
 C:Species: Monodelphis domestica
 C:Date: 20-Feb-1995 #sequence
 C:Revision 20-Feb-1995 #text_change 12-Apr-1995
 C:Accession: S31622
 R:Kusewitt, D.F.; Sabourin, C.L.K.; Budge, C.L.; Ley, R.D.
 submitted to the EMBL Data Library, September 1992
 A:Description: Characterization of cDNA encoding basic fibroblast growth factor of the m
 A:Reference number: S31622
 A:Accession: S31622
 A:Status: preliminary
 A:Molecule type: DNA
 A:Residues: 1-164 <RMS>
 A:Cross-references: EMBL:Z15154
 C:Superfamily: fibroblast growth factor

Query Match:	91.7%;	Score 719.5;	DB 2;	Length 164;
Best Local Similarity:	92.5%;	Pred. No. 4e-64;		
Matches 136;	Conservative 5;	Mismatches 5;	Indels 1;	Gaps 1;

Oy	1	PALPED - GGSAPFPNGHFKDPRKLYCANGSGFEELIHPDGVDVQAKRESDPDHILTOLOAE	59
Dd	18	PALSDDGGGGAFFPGHFKDPRKLYCANGSGFEELIHPDGVDVQAKRESDPDHILTOLOAE	77
Oy	60	RGVYSIKGVCANRRLAMKEGRGLASCVIDCECFEPFRELSSNNYNYRSRKYSWYVALK	119
Dd	78	RGVYSIKGVCANRRLAMKEDETRLALTYVEBECEFEEBLESNNINITYRSRKYSNMYVALK	137
Oy	120	RTGYKRLGSKTGPCKAAILFLPMPSAKS	146
Dd	138	RTGYKRLGSKTGPCKAAILFLPMPSAKS	154

RESULT 9

A40117

basic fibroblast growth factor - African clawed frog

C:Species: *Xenopus laevis* (African clawed frog)

C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999

C:Accession: A40117; A29618

R:Kimmelman, D.; Abraham, J.A.; Haaparanta, T.; Palisl, T.M.; Kirschner, M.W.

Science 242, 1053-1056, 1988

A:Title: The presence of fibroblast growth factor in the frog egg: its role as a natural

A:Reference number: A40117; MUID:89058621

A:Accession: A40117

A:Status: preliminary

A:Molecule type: mRNA

A:Residues: 1-155 <K1>

A:Cross-references: GB:M18067; NID:g214177; PIDD:AAA49726.1; PID:g214178; GB:M21092

R:Kimmelman, D.; Kirschner, M.

Cell 51, 869-877, 1987

A:Title: Synergistic induction of mesoderm by FGF and TGF-beta and the identification of

A:Reference number: A29618; MUID:88052890

A:Accession: A29618

A:Molecule type: mRNA

A:Residues: 95-110, 112-155 <K1>

C:Superfamily: fibroblast growth factor

:Keywords: growth factor

Query Match	82.3%	Score 646	DB 1	Length 155
Best Local Similarly	82.9%	Pred. No. 7.4e-57		
Matches 121	Conservative	9	Mismatches 16	Indels 0
				Gaps 0

OY PALPDEGSSGAFFPGPHFDPRLRYCKNKGFLPLRHPPGDGVREKSDPHIKIOLAVER 60
| | | | | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | :
Db PTEBDDGNFTFSGSFDFPRRLCYCKNKGFFLRINSQDGRDGSIDKDKSHIKIOLAVER 69

OY 61 GVSISIKGCYCANRITAMKEDELAKCCVTDCEFFERLESNNNTYTYSRRYTSWYAALR 120
| | | | | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | :
70 GVSTSIKGTATARYIAMKEDELGLTSLRITDCFEFFELENNNTYTYSRRYSWYAALR 129

Qy.	121	TGQYKLGSKTGPQKAILFLPMSAKS	146
	11111	1111111111111111	
Db	130	TGQYKNGSSTGPGQKAILFLPMSAKS	155

```

RESULT 10
A32484
basic fibroblast growth factor precursor, 25k - guinea pig (fragments)
C:Species: Cavia porcellus (guinea pig)
C:Date: 20-Oct-1989 #sequence_revision 20-Oct-1989 #text_change 15-Jun-1996
C:Accession: A32484
R:Sommer, A.; Moscatelli, D.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 160, 1267-1274, 1989
A:Title: An amino-terminally extended and post-translationally modified form of a 25k
A:Reference number: A32484; MUID:89273588
A:Accession: A32484
A:Status: Preliminary; nucleic acid sequence not shown; not compared with conceptual
A:Molecule type: mRNA
A:Residues: 1-125 <SOM>
C:Superfamily: fibroblast growth factor

```

Query Match	54.5%	Score 427.5;	DB 2;	Length 125;
Best Local Similarity	61.0%;	Pred. No. 2.9e-35;		
Matches 89;	Conservative 4;	Mismatches 51;	Gaps 3;	

[illegible]

QY	121	TGQYKLGSKTGPQKAILFLPMSAKS	146
Db	100	TGQYKLGSKTGPQKAILFLPMSAKS	125

```

RESULT 11
A60721
acidic fibroblast growth factor - golden hamster
N:Alternate names: heparin-binding growth factor 1
C:Species: Mesocricetus auratus (golden hamster)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A60721
J:Hall, J.A.; Harris, M.A.; Malark, M.; Mansson, P.E.; Zhou, H.; Harris, S.E.
R:Cell: Biochem. 43, 17-26 1990
A:Title: Characterization of the hamster DDT-1 cell atcF/HGBF-I gene and cDNA and its
A:Reference number: A60721; MUID:90270291
A:Accession: A60721
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <HAL>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding

```

Query Match	50.4%	Score 396;	DB 1;	Length 155;
Best Local Similarity	56.6%	Pred. No. 4.9e-32;		
Matches 77; Conservative	16;	Mismatches 41;	Indels 2;	Gaps 1;

```
QY      13 PRGHKDPKRLCYKNNGFFLRHPDGRVDGVRSDPHIKQLQLAEEGRVYSIKGCANR 72
        |||::||| ||| ||| ||| ||| ::||| ||| ||| ||| :
Db      19 PPGNYKKPLLYCSMGHFLRLIPDGTFVDGTRDSQHILQLSASAGAYYIKGTETGQ 78
```

QY 73 YLAKKEDGRLLASKCVTDECFEEERLEBNNNYNRYRSRKT--SWYVALKRPGQYIKGSKT 130
||| || | : ::| ||| :||| :| : :||| : | :
Db 79 YLADTDGLLYGSQFPNEECFLERLEBNHNYNTYSKKAAEKWVEVGLKNKGSCRKRPRT 138

```
QY      131 GPGOKAILFLPM SAKS 146
          |||||
Db      139 HYGOKAILFLPLPVSS 154
```

RESULT 12

A33665
acidic fibroblast growth factor 1 precursor [validated] - human

C:N/A; Alternate names: beta-BCGF; endothelial cell growth factor beta; heparin-binding growth factor

C:Species: Homo sapiens (man)

C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 08-Dec-2000

C:Accession: A33665; A32316; S18217; A43804; A24662; JH0707; S35535; S35536; I39413; A23060; M10000

R:Mang, W.P.; Lehtoma, K.; Varban, M.L.; Krishnan, I.; Chiu, I.M.

MOL: Cell. Biol. 9, 2387-2395, 1989

A>Title: Cloning of the gene coding for human class 1 heparin-binding growth factor and characterization of its expression in primary cultures of human endothelial cells

A:Reference number: A32316; MUID:89343957

A:Accession: A32316

A:Molecule type: DNA

A:Residues: 1-155 <MAN>

A:Cross-references: GB:M23087; NID:g183875; PIDN:AA52638.1; PID:g936768

R:Wang, W.P.; Quirk, D.; Balcerzak, S.P.; Needleman, S.W.; Chiu, I.M.

Oncogene 6, 1521-1529, 1991

A>Title: Cloning and sequence analysis of the human acidic fibroblast growth factor gene

A:Reference number: S18217; MUID:92019819

A:Accession: S18217

A:Molecule type: DNA

A:Residues: 1-155 <MA2>

A:Cross-references: EMBL:M23086

R:Chiu, I.M.; Wang, W.P.; Lehtoma, K.

Oncogene 5, 755-762, 1990

A>Title: Alternative splicing generates two forms of mRNA coding for human heparin-binding growth factor

A:Reference number: A43804; MUID:90265618

A:Accession: A43804

A:Molecule type: mRNA

A:Residues: 1-155 <CHT>

A:Cross-references: EMBL:X51943; NID:g32435; PIDN:CAA36206.1; PID:g32436

R:Jaye, M.; Hawk, R.; Burgess, W.; Ricca, G.A.; Chiu, I.M.; Ravera, M.W.; O'Brien, S.J.; Berman, J.

Science 233, 541-545, 1986

A>Title: Human endothelial cell growth factor: cloning, nucleotide sequence, and chromosome localization

A:Reference number: A24662; MUID:86261805

A:Accession: A24662

A:Molecule type: mRNA

A:Residues: 1-155 <GVY>

A:Cross-references: MBM:M3361; NID:g181941; PIDN:AA79245.1; PID:g181942

R:Yu, Y.L.; Kha, H.; Golden, J.A.; Michalsen, A.A.J.; Goetzl, E.U.; Turk, C.W.

J. Exp. Med. 175, 1073-1080, 1992

A>Title: An acidic fibroblast growth factor protein generated by alternate splicing acts as a mitogen for human endothelial cells

A:Reference number: JH0707; MUID:92202857

A:Accession: JH0707

A:Molecule type: mRNA

A:Residues: 1-155 <YUY>

A:Cross-references: GB:X65778; NID:g936163; PIDN:CAA46661.1; PID:g936164

R:Payson, R.A.; Ganahan, H.; Chotani, M.A.; Wang, W.P.; Harris, S.E.; Myers, R.L.; Chiu, I.M.

Nucleic Acids Res. 21, 489-495, 1993

A>Title: Cloning of two novel forms of human acidic fibroblast growth factor (afGF) mRNAs from fetal skin fibroblasts

A:Reference number: S35535; MUID:93181239

A:Accession: S35535

A>Status: translation not shown

A:Molecule type: RNA

A:Residues: 1-58 <PAV>

A:Cross-references: GB:L01485

A:Accession: S35536

A>Status: translation not shown

A:Molecule type: RNA

A:Residues: 1-58 <PAZ>

A:Cross-references: GB:L01487

R:Crumley, G.; Dionne, C.A.; Jaye, M.

Biochem. Biophys. Res. Commun. 171, 7-13, 1990

A:Title: The gene for human acidic fibroblast growth factor encodes two upstream exons
A:Reference number: 139412; MUID:90365758
A:Accession: 139413
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-40 <RES>
A:Cross-references: GB:M60515; NID:g178226; PIDN:AAA51672.1; PID:g553170; GB:M60516;
R:Harper, J.W.; Striyom, D.J.; Lobb, R.R.
Biochemistry 25, 4097-4103, 1986
A:Reference number: A23553; MUID:86296647
A:Accession: A23553
A:Molecule type: protein
A:Residues: 16-155 <HAR>
R:Gimenez-Gallogo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 138, 611-617, 1986
A:Title: The complete amino acid sequence of human brain-derived acidic fibroblast gr
A:Reference number: A24820; MUID:86295741
A:Accession: A24820
A:Molecule type: protein
A:Residues: 16-155 <GIM>
R:Gimenez-Gallogo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 135, 541-548, 1986
A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino termin
A:Reference number: A90122; MUID:86186784
A:Accession: A24243
A:Molecule type: protein
A:Residues: 16-47 <G12>
A:Experimental source: brain
R:Gautschi, P.; Frater-Schroder, M.; Bohlen, P.
FEBS Lett. 204, 203-207, 1986
A:Title: Partial molecular characterization of endothelial cell mitogens from human b
A:Reference number: A91364; MUID:86275260
A:Accession: A24301
A:Molecule type: protein
A:Residues: 16-30,'X',32-49 <GAD>
R:Gautschi-Sova, P.; Muller, T.; Bohlen, P.
Biochem. Biophys. Res. Commun. 140, 874-880, 1986
A:Title: Amino acid sequence of human acidic fibroblast growth factor.
A:Reference number: A26386; MUID:8704871
A:Accession: A26386
A:Molecule type: protein
A:Residues: 16-155 <GAD>
A:Experimental source: Brain
R:Chavan, A.J.; Haley, B.E.; Volkin, D.B.; Marfia, K.E.; Verticelli, A.M.; Bruner, M.
Biochemistry 33, 7193-7202, 1994
A:Title: Interaction of nucleotides with acidic fibroblast growth factor (FGF-1).
A:Reference number: A53639; MUID:94271773
A:Accession: A53639
A:Molecule type: protein
A:Residues: 16-30,'X',32-38;73-75,'X',77-97,'X',99-101;128-131,'X',133-140,'X',142-15
A:Gene: GDB:FGF1; FGFA
A:Genetics:
A:Cross-references: GDB:119909; OMIM:131220
A:Map position: 5q31.3-5q33.2
A:Introns: 57/1; 91/3
C:Superfamily: fibroblast growth factor
C:Keywords: alternative splicing; growth factor; heparin binding
F:16-155/Product: fibroblast growth factor 1 #status experimental <MAT>
F:129/Binding site: carbohydrate (Asn) (covalent) #status absent

1
:
:

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:42 ; Search time 23.13 seconds

(without alignments)
244.404 Million cell updates/sec

Title: US-09-802-365-4

Perfect score: 1 PALPDDGGSGAPPPGHFKDP.....GSKTGPQKALFLPMSAKS 146

Sequence: BLOSUM62

Gapop 10.0 , Gapext 0.5

Scoring table: 105224 segs, 38719550 residues

Searched: 105224 segs, 38719550 residues

Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query	Length	ID	Description
1	785	100.0	155	1	FGF2_HUMAN
2	776	98.9	155	1	FGF2_BCVIN
3	770	98.1	155	1	FGF2_SHEEP
4	761.5	97.0	154	1	FGF2_RAT
5	756.5	96.4	154	1	FGF2_MOUSE
6	738	94.0	137	1	FGF2_RABIT
7	723	92.1	158	1	FGF2_CHICK
8	719.5	91.7	156	1	FGF2_MONDO
9	646	82.3	155	1	FGF2_XENLA
10	396	50.4	155	1	FGF1_MESAU
11	386	49.2	155	1	FGF1_HUMAN
12	383.5	48.9	155	1	FGF1_CHICK
13	382	48.7	155	1	FGF1_MOUSE
14	380	48.4	152	1	FGF1_PIG
15	375	47.8	155	1	FGF1_BOVIN
16	375	47.8	155	1	FGF1_CHICK
17	252.5	32.2	256	1	FGF4_CHICK
18	250	31.8	256	1	FGF6_MOUSE
19	249	31.7	208	1	FGF6_HUMAN
20	248.5	31.7	206	1	FGF4_HUMAN
21	248	31.6	220	1	FGF3_CHICK
22	246.5	31.4	206	1	FGF4_BOVIN
23	241.5	30.8	264	1	FGF5_MOUSE
24	241.5	30.8	266	1	FGF5_RAT
25	239	30.4	187	1	FGF3_XENLA
26	239	30.3	237	1	FGF3_XENLA
27	237.5	30.2	245	1	FGF3_MOUSE
28	237.5	30.1	239	1	FGF3_HUMAN
29	230.0	30.0	192	1	FGF4_MOUSE
30	229.9	29.9	192	1	FGF4_XENLA
31	229.7	29.7	268	1	FGF5_HUMAN
32	229.5	29.5	268	1	FGF5_HUMAN
33	229.5	29.5	268	1	FGF9_HUMAN
34	229.5	29.5	268	1	FGF9_MOUSE
35	229.5	29.5	268	1	FGF9_MOUSE
36	229.5	29.5	268	1	FGF9_MOUSE
37	229.5	29.5	268	1	FGF9_MOUSE
38	229.5	29.5	268	1	FGF9_MOUSE
39	229.5	29.5	268	1	FGF9_MOUSE
40	229.5	29.5	268	1	FGF9_MOUSE
41	229.5	29.5	268	1	FGF9_MOUSE
42	229.5	29.5	268	1	FGF9_MOUSE
43	229.5	29.5	268	1	FGF9_MOUSE
44	229.5	29.5	268	1	FGF9_MOUSE
45	229.5	29.5	268	1	FGF9_MOUSE

34	216	27.5	208	1	FGF9_RAT	P36364	rattus norv
35	212.5	27.1	209	1	FGF9_XENLA	O91875	xenopus lae
36	210.5	26.8	194	1	FGF7_CANFA	P79150	canis famli
37	210	26.8	211	1	FGF7_HUMAN	O9995	homo sapien
38	209.5	26.7	194	1	FGF7_MOUSE	P36363	mus musculu
39	207.5	26.4	194	1	FGF7_HUMAN	P21781	homo sapien
40	207.5	26.4	194	1	FGF7_SHEEP	P48808	ovis aries
41	206.5	26.3	207	1	FGF7_RAT	O54769	rattus norv
42	205.5	26.2	207	1	FGF7_HUMAN	O43320	homo sapien
43	204.5	26.1	194	1	FGF7_PIG	O99198	sus scrofa
44	203	25.9	208	1	FGF9_HUMAN	O15520	homo sapien
45	203	25.9	215	1	FGF9_RAT	P70492	rattus norv

ALIGNMENTS

RESULT	ID	FGF2_HUMAN	STANDARD	PRT	155 AA.
AC	P09038				
DT	01-NOV-1988	(Rel. 09, Created)			
DT	01-NOV-1988	(Rel. 09, Last sequence update)			
DT	01-MAR-2002	(Rel. 41, Last annotation update)			
DE	Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast				
DE	growth factor) (BGF) (Prostatropin).				
GN	FGF2 OR FGF2.				
OS	Homo sapiens (Human).				
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;				
OC	Mammalia; Eutheria; Primates; Catarrhini; Homidae; Homo.				
OX	NCBI_TaxID=9606;				
RN	[1]				
RP	SEQUENCE FROM N.A.				
RX	MEDLINE=87053817; PubMed=3780670;				
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Friedman J.,				
RA	Gospodarowicz D., Fiddes J.C.;				
RT	"Human basic fibroblast growth factor: nucleotide sequence and				
RT	genomic organization.";				
RL	EMBO J. 5:2523-2528(1986).				
RN	[2]				
RP	SEQUENCE FROM N.A.				
RX	MEDLINE=87217066; PubMed=3472745;				
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;				
RA	"Human basic fibroblast growth factor: nucleotide sequence, genomic				
RT	organization, and expression in mammalian cells.";				
RL	Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).				
RN	[3]				
RP	SEQUENCE FROM N.A.				
RX	MEDLINE=87213238; PubMed=3579930;				
RA	Sommer A., Brewer M.T., Thompson R.C., Moscatelli D., Presta M.,				
RA	Rifkin D.B.;				
RT	"A form of human basic fibroblast growth factor with an extended				
RT	amino terminus.";				
RL	Biochem. Biophys. Res. Commun. 144:543-550(1987).				
RN	[4]				
RP	SEQUENCE FROM N.A.				
RX	MEDLINE=87162468; PubMed=2435575;				
RA	Kurokawa T., Sasada R., Iwane M., Igatahshi K.;				
RT	"Cloning and expression of cDNA encoding human basic fibroblast				
RT	growth factor.";				
RL	FEBS Lett. 213:189-194(1987).				
RN	[5]				
RP	SEQUENCE FROM N.A.				
RX	MEDLINE=89184522; PubMed=2538817;				
RA	Prats H., Kaghad M., Prats A.C., Klagsbrun M., Lelias J.M.,				
RA	Llanaun P., Chalou P., Tauber J.P., Amalric F., Smith J.A.,				
RA	Caput D.;				
RT	"High molecular mass forms of basic fibroblast growth factor are				
RT	initiated by alternative CUG codons.";				
RL	Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).				
RN	[6]				
RP	SEQUENCE OF 10-35.				
RX	MEDLINE=86275260; PubMed=3732516;				

der M., Boehlen P.;
erization of endothelial cell mitogens from
sic fibroblast growth factors.";

64259;
Hatcher V.B., Thomas K.A.;
and basic fibroblast growth factors:
specific mitogenic activities.";
n. 135:541-548(1986).

Story M.T., Esch F., Shimazaki S., Sasse J., Jacobs S.C., Lawson R.K.;
"Amino-terminal sequence of a large form of basic fibroblast growth
factor isolated from human benign prostatic hyperplastic tissue.";
Biochem. Biophys. Res. Commun. 142:702-709(1987).

[9]
X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
MEDLINE=91195367; PubMed=1707542;
Eriksson A.E., Cousens L.S., Weaver L.H., Matthews B.W.;
"Three-dimensional structure of human basic fibroblast growth
factor.";
Proc. Natl. Acad. Sci. U.S.A. 88:3441-3445(1991).

[10]
X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
MEDLINE=94004464; PubMed=7691311;
Eriksson A.E., Cousens L.S., Matthews B.W.;
"Refinement of the structure of human basic fibroblast growth
factor at 1.6-A resolution and analysis of presumed heparin binding sites by
selenate substitution.";
Protein Sci. 2:1274-1284(1993).

[11]
X-RAY CRYSTALLOGRAPHY (1.8 ANGSTROMS).
MEDLINE=91195368; PubMed=1849658;
Zhang J., Cousens L.S., Barr P.J., Sprang S.R.;
"Three-dimensional structure of human basic fibroblast growth factor,
a structural homolog of interleukin 1 beta.";
Proc. Natl. Acad. Sci. U.S.A. 88:3446-3451(1991).

[12]
X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
MEDLINE=92121151; PubMed=1769963;
Ago H., Kitagawa Y., Fujishima A., Matsuura Y., Katsube Y.;
"Crystal structure of basic fibroblast growth factor at 1.6-A
resolution.";
J. Biochem. 110:360-363(1991).

[13]
X-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS).
MEDLINE=91095983; PubMed=1702556;
Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T.,
Hsu B.T., Rees D.C.;
"Three-dimensional structures of acidic and basic fibroblast growth
factors.";
Science 251:90-93(1991).

[14]
STRUCTURE BY NMR.
MEDLINE=97040521; PubMed=8885834;
Moy F.J., Seddon A.P., Boehlen P., Powers R.;
"High-resolution solution structure of basic fibroblast growth factor
determined by multidimensional heteronuclear magnetic resonance
spectroscopy.";
Biochemistry 35:13552-13561(1996).

-1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.

-1- SUBUNIT: MONOMER.

-1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.

-1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.

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DR EMBL; M17599; AAS2534.1; ALT_INIT.
DR EMBL; X04431; CAA28027.1;
DR EMBL; X04432; CAA28028.1;
DR EMBL; X04433; CAA28029.1;
DR EMBL; M27968; AAS2448.1;
DR EMBL; J04513; AAS2533.1; ALT_INIT.
DR PIR; A25824; A26642.
DR PIR; A26642; A26642.
DR PIR; B24243; B24243.
DR PIR; B24301; B24301.
DR PIR; B32878; B32878.
DR PIR; S00297; S00297.
DR PDB; 2FGE; 15-APR-92.
DR PDB; 4FGE; 15-JUL-93.
DR PDB; 1FGA; 15-JUL-93.
DR PDB; 1FPB; 03-APR-96.
DR PDB; 1BFC; 03-APR-96.
DR PDB; 1BEF; 16-JUN-97.
DR PDB; 1BFG; 31-JAN-94.
DR PDB; 2BFH; 30-APR-94.
DR PDB; 1BLA; 08-NOV-96.
DR PDB; 1BLD; 08-NOV-96.
DR MIM; 134920;
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILL_HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
KW 3D-structure.
FT PROPEP 1 9
FT CHAIN 10 155
FT SITE 46 48
FT SITE 88 90
FT BINDING 27 31
FT BINDING 116 119
FT STRAND 30 34
FT STRAND 35 38
FT STRAND 39 43
FT STRAND 45 46
FT STRAND 49 52
FT TURN 55 56
FT TURN 59 60
FT STRAND 62 66
FT TURN 69 70
FT STRAND 71 76
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FT STRAND 91 94
FT STRAND 99 101
FT STRAND 103 107
FT TURN 109 110
FT STRAND 113 117
FT TURN 121 122
FT STRAND 124 124
FT STRAND 127 127
FT TURN 129 130
FT TURN 132 133
FT STRAND 136 138
FT HELIX 141 142
FT HELIX 144 146
FT STRAND 148 152
SQ SEQUENCE 155 AA; 17254 MW; BE6CE13373007129 CRC64;

Query Match 100.0%; Score 785; DB 1; Length 155;
 Best Local Similarity 100.0%; Pred. No. 1.5e-75;
 Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGSGAAPPGEHEDKPRRLCYCKNGFPLRLHPDGRVDGVREKSDPHIKLOIAEER 60
 |||||||
 DB 10 PALPEDGSGAAPPGEHEDKPRRLCYCKNGFPLRLHPDGRVDGVREKSDPHIKLOIAEER 69
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QY 61 GVSATKGCARRYLAMKEDGRLLASCKVTDECFFERLESNNYTRSRKYSWYALKR 120
 |||||||
 DB 70 GVSATKGCARRYLAMKEDGRLLASCKVTDECFFERLESNNYTRSRKYSWYALKR 129
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QY 121 TGOYKLGSKTGPCOKAILFLPMSAKS 146
 |||||||
 DB 130 TGOYKLGSKTGPCOKAILFLPMSAKS 155
 |||||||

RESULT 2
 FGF2_BOVIN
 ID FGF2_BOVIN STANDARD; PRT; 155 AA.
 AC P03969;
 DT 23-OCT-1986 (Rel. 02, Created)
 DT 23-OCT-1986 (Rel. 02, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatropin) [contains: Kidney-derived growth factor].
 OS Bos taurus (Bovine).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae; Bovidae; Bovinae; Bos.
 OC NCBI_TaxID=9913;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=86261806; PubMed=2425435;
 RA Abraham J.A., Mergia A., Whang J.L., Tumolo A., Friedman J., Hjertild K.A., Gospodarowicz D., Fiddes J.C.;
 RT "Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic fibroblast growth factor.";
 RL Science 233:545-548(1986).
 RN [2]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=87217066; PubMed=3472745;
 RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;
 RT "Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";
 RL Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).
 RN [3]
 RP SEQUENCE OF 10-155.
 RX MEDLINE=86016731; PubMed=3863109;
 RA Esch F., Baird A., Ling N., Ueno N., Hill F., Denoroy L., Klepper R., Gospodarowicz D., Boehlen P., Guillemin R.;
 RT "Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and comparison with the amino-terminal sequence of bovine brain acidic FGF.";
 RL Proc. Natl. Acad. Sci. U.S.A. 82:6507-6511(1985).
 RN [4]
 RP SEQUENCE OF 1-9.
 RX MEDLINE=86295737; PubMed=3741423;
 RA Ueno N., Baird A., Esch F., Ling N., Guillemin R.;
 RT "Isolation of an amino terminal extended form of basic fibroblast growth factor.";
 RL Biochem. Biophys. Res. Commun. 138:580-588(1986).
 RN [5]
 RP SEQUENCE OF 25-41.
 RC TISSUE=Kidney;
 RX MEDLINE=86095426; PubMed=4081126;
 RA Baird A., Esch F., Boehlen P., Ling N., Gospodarowicz D.;
 RT "Isolation and partial characterization of an endothelial cell growth factor from the bovine kidney: homology with basic fibroblast growth factor.";

RL Regul. Pept. 12:201-213(1985).
 RN [6]
 RP SEQUENCE OF 21-40.
 RC TISSUE=Kidney;
 RX MEDLINE=87119165; PubMed=3809608;
 RA Ueno N., Baird A., Esch F., Shimasaki S., Ling N., Guillemin R.;
 RT "Purification and partial characterization of a mitogenic factor from bovine liver: structural homology with basic fibroblast growth factor.";
 RL Regul. Pept. 16:135-145(1986).
 RN [7]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RX MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T., Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth factors.";
 RL Science 251:90-93(1991).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 CC EMBL: M13440; AAA30518.1; .
 DR PIR: A24663; GKB0B.
 DR PIR: A24819; A24819.
 DR PIR: A32878; A32878.
 DR PDB: 1BAS; 31-OCT-93.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IIL_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; IILHBGF.
 DR PRODOM: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT CHAIN 25 155
 FT SITE 46 48
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT TURN 35 38
 FT STRAND 39 43
 FT TURN 45 46
 FT STRAND 49 52
 FT TURN 55 56
 FT HELIX 58 60
 FT STRAND 62 68
 FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 HEPARIN-BINDING GROWTH FACTOR 2.
 KIDNEY-DERIVED GROWTH FACTOR.
 CELL ATTACHMENT SITE (POTENTIAL).
 CELL ATTACHMENT SITE (POTENTIAL).
 HEPARIN (POTENTIAL).
 HEPARIN (POTENTIAL).

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FT STRAND 113 117
FT TURN 121 122
FT STRAND 124 124
FT STRAND 127 127
FT TURN 129 130
FT STRAND 133 133
FT HELIX 136 138
FT TURN 141 142
FT HELIX 144 146
FT STRAND 148 151
SQ SEQUENCE 155 AA; 17250 MM; BE6CE70FA6107129 CRC64;

Query Match 98.9%; Score 776; DB 1; Length 155;
Best Local Similarity 98.6%; Pred. No. 1.3e-74;
Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 PALPEDGSSGAFPPGHFDPKRLCKNGGFRLRHPDGRVGVGRKSPHKLQQAER 60
DB 10 PALPEDGSSGAFPPGHFDPKRLCKNGGFRLRHPDGRVGVGRKSPHKLQQAER 69
QY 61 GVSSTKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSRKYTSWYALKR 120
DB 70 GVSSTKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSRKYTSWYALKR 129
QY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
DB 130 TGOYKLGSKTGPQKAILFLPMSAKS 155

RESULT 3
FGF2_SHEEP STANDARD; PRT; 155 AA.
ID FGF2_SHEEP AC P20003;
DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Ovis aries (Sheep).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Kuminantia; Pecora; Bovidae;
OC Bovidae; Caprinae; Ovis.
OX NCBI_TaxID=9940;
RN 11
RP SEQUENCE FROM N.A.
RA Sutton R., Ward W.G., Raphael K.A., Cam G.R.;
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
RN 12
RP SEQUENCE OF 9-155.
RX MEDLINE=88055577; PubMed=3678486;
RA Simpson R.J., Moritz R.L., Lloyd C.J., Fabrl L.J., Nlce E.C.,
RA Rubira M.R., Burgess A.W.;
RT "Primary structure of ovine pituitary basic fibroblast growth
RT factor."
RL FEBS Lett. 224:128-132(1987).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL; L36136; AAA31519.1; -.
DR PIR; S00185; S00185.
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILHBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; HBGF_FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 155
FT SITE 45 48
FT SITE 87 90
FT BINDING 27 31
FT BINDING 116 119
SQ SEQUENCE 155 AA; 17280 MM; B5F2364BA610606D CRC64;

Query Match 98.1%; Score 770; DB 1; Length 155;
Best Local Similarity 97.9%; Pred. No. 5.6e-74;
Matches 143; Conservative 1; Mismatches 2; Indels 0; Gaps 0;

QY 1 PALPEDGSSGAFPPGHFDPKRLCKNGGFRLRHPDGRVGVGRKSPHKLQQAER 60
DB 10 PALPEDGSSGAFPPGHFDPKRLCKNGGFRLRHPDGRVGVGRKSPHKLQQAER 69
QY 61 GVSSTKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSRKYTSWYALKR 120
DB 70 GVSSTKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSRKYTSWYALKR 129
QY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
DB 130 TGOYKLGSKTGPQKAILFLPMSAKS 155

RESULT 4
FGF2_RAT STANDARD; PRT; 154 AA.
ID FGF2_RAT AC P13109;
DT 01-JAN-1990 (Rel. 13, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN 11
RP SEQUENCE FROM N.A.
RA STRAIN=SPRAGUE-DAWLEY; TISSUE=Ovary;
RX MEDLINE=89061721; PubMed=3196337;
RA Shimasaki S., Emoto N., Koda A., Mercado M., Shibata F.,
RA Cooksey K., Baird A., Ling N.;
RT "Complementary DNA cloning and sequencing of rat ovarian basic
RT fibroblast growth factor and tissue distribution study of its mRNA."
RL Biochem. Biophys. Res. Commun. 157:256-263(1988).
RN 12
RP SEQUENCE FROM N.A.
RA TISSUE=Brain;
RX MEDLINE=88262516; PubMed=3387229;
RA Kurokawa T., Seno M., Igarashi K.;
RT Nucleotide sequence of rat basic fibroblast growth factor cDNA."
RL Nucleic Acids Res. 16:5201-5201(1988).
RN 13
RP SEQUENCE OF 1-28 FROM N.A.
RA STRAIN=SPRAGUE-DAWLEY; TISSUE=Testis;
RX MEDLINE=97200905; PubMed=9048734;
RA Pasumathl K.B.S., Jin Y., Cattini P.A.;
```


RT "Cloning of the rat fibroblast growth factor-2 promoter region and
RT its response to mitogenic stimuli in glioma C6 cells.";
RL J. Neurochem. 68:898-908(1997).
RN [4]
RP SEQUENCE OF 35-154 FROM N.A.
RC STRAIN-SPRAGUE-DAWLEY; TISSUE-Brain;
RX MEDLINE-92329546; PubMed-1378302;
RA El-Husseini A.E.D., Paterson J.A., Myal Y., Shiu R.P.C.;
RT "PCR detection of the rat brain basic fibroblast growth factor (bFGF)
RT mRNA containing a unique 3' untranslated region.";
RL Biochim. Biophys. Acta 1131:314-316(1992).
CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -I- SUBUNIT: MONOMER.
CC -I- TISSUE SPECIFICITY: FOUND IN ALL THE TISSUES EXAMINED.
CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AREF.
CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL: M22427; AAA41210.1; -
DR EMBL: X07285; CAA30265.1; -
DR EMBL: U78079; AAC53225.1; -
DR EMBL: X61697; CAA43863.1; -
DR PIR: S00876; S00876.
DR PIR: A31674; A31674.
DR HSSP: P09038; 1BRF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILI_HBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17139 MW; 1A0F14FF423D8403 CRC64;
Query Match 97.0%; Score 761.5; DB 1; Length 154;
Best Local Similarity 97.3%; Pred. No. 4.4e-73;
Matches 142; Conservative 3; Mismatches 0; Indels 1; Gaps 1;
OY 1 PALPEDGSGAPPGHFKDPKRLCKNGGFRLRHPDGVGVREKSDPHIKLOQAER 60
DB 10 PALPEDGG-GAPPPGHFKDPKRLCKNGGFRLRHPDGVGVREKSDPHVILQQAER 68
OY 61 GVVSTKGCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYNYRSKRYTSWVALKR 120
DB 69 GVVSTKGCANRYLAMKEDGRLLASKCVTECEFFERLESNNYNYRSKRYTSWVALKR 128
OY 121 TGOYKLGSKTGPGOKAILFLPMSAKS 146
DB 129 TGOYKLGSKTGPGOKAILFLPMSAKS 154
RESULT 5
ID FGF2_MOUSE STANDARD; PRT; 154 AA.
AC P15655;
DT 01-APR-1990 (Rel. 14, Created)

DT 01-APR-1990 (Rel. 14, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (bFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sclirognatha; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE-90201563; PubMed-2318343;
RA Hebert J.M., Basilico C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [2]
RP SEQUENCE FROM N.A.
RC STRAIN=C57BL/6J, A/J, AND NOD/LtJ; TISSUE=Spleen;
RA Ma R.Z., Teuscher C.;
RL Submitted (May-1998) to the EMBL/GenBank/DBJ databases.
CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -I- SUBUNIT: MONOMER.
CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AREF.
CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL: M30644; AAA37621.1; -
DR EMBL: AF065903; AAC17503.1; -
DR EMBL: AF065904; AAC17504.1; -
DR EMBL: AF065905; AAC17505.1; -
DR PIR: C37360; C37360.
DR HSSP: P09038; 1BRF.
DR MGD: MGI:95516; Fgf2.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILI_HBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17153 MW; 689F677416274388 CRC64;
Query Match 96.4%; Score 756.5; DB 1; Length 154;
Best Local Similarity 96.6%; Pred. No. 1.5e-72;
Matches 141; Conservative 4; Mismatches 0; Indels 1; Gaps 1;
OY 1 PALPEDGSGAPPGHFKDPKRLCKNGGFRLRHPDGVGVREKSDPHIKLOQAER 60
DB 10 PALPEDGGA-APPPGHFKDPKRLCKNGGFRLRHPDGVGVREKSDPHVILQQAER 68
OY 61 GVVSTKGCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYNYRSKRYTSWVALKR 120
DB 69 GVVSTKGCANRYLAMKEDGRLLASKCVTECEFFERLESNNYNYRSKRYTSWVALKR 128
OY 121 TGOYKLGSKTGPGOKAILFLPMSAKS 146

Db 129 TGOYKLGSKTGPQKALFLPMSAKS 154

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|||||
RESULT 6
ID FGF2_RABIT STANDARD; PRT; 137 AA.
AC P48799;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 (HBGF-2) (Basic fibroblast growth
factor) (HBGF) (Prostathropin) (Fragment).
GN FGF2.
OS Oryctolagus cuniculus (Rabbit).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX NCBI_TaxID=9986;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=NEW ZEALAND WHITE; TISSUE=Smooth muscle;
MEDLINE=93343209; PubMed=6342599;
RA Winkles J.A., Friesel R., Alberts G.F., Janat M.F., Liu G.;
RT "Elevated expression of basic fibroblast growth factor in an
RT immortalized rabbit smooth muscle cell line."
RL Am. J. Pathol. 143:518-527(1993).
CC - FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC - SUBUNIT: MONOMER.
CC - MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC - SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC or send an email to license@sib-sib.ch).
CC -----
DR EMBL: L12034; AAA31248.1; -.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF_1.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT BINDING 18 22
FT BINDING 107 110 HEPARIN (POTENTIAL).
FT NON_TER 137 137
SQ SEQUENCE 137 AA; 15418 MW; 0D9E5A57888B8C51 CRC64;
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Query Match 94.0%; Score 738; DB 1; Length 137;
Best Local Similarity 99.3%; Pred. No. 1,le-70;
Matches 136; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

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QY 1 PALPDGSGGAPPGHFKPKRLYCKNGGFLRIHPDGVVDGVRKSDPHIKLOLAER 60
DB 1 PALPDGSGGAPPGHFKPKRLYCKNGGFLRIHPDGVVDGVRKSDPHIKLOLAER 60
QY 61 GVSSTKGVANRYLAKMEKEDGRLASCVTDECFEERLESNNNTYRSKRYTSMYVALKR 120
DB 61 GVSSTKGVANRYLAKMEKEDGRLASCVTDECFEERLESNNNTYRSKRYTSMYVALKR 120
QY 121 TGOYKLGSKTGPQKAL 137
DB 121 TGOYKLGSKTGPQKAL 137
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RESULT 7
ID FGF2_CHICK STANDARD; PRT; 158 AA.
AC P48800;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
growth factor) (HBGF).
GN FGF2 OR FGF-2.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RC MEDLINE=93246053; PubMed=7683281;
RA Borja A.Z., Zeller R., Meljers C.;
RT "Expression of alternatively spliced bFGF first coding exons and
RT antisense mRNAs during chicken embryogenesis."
RL Dev. Biol. 157:110-118(1993).
CC - FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC - SUBUNIT: MONOMER.
CC - MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC - SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@sib-sib.ch).
CC -----
DR EMBL: M95707; AAA48617.1; -.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILL_HBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 12
FT CHAIN 13 158
FT BINDING 30 34 HEPARIN (POTENTIAL).
FT BINDING 119 122 HEPARIN (POTENTIAL).
SQ SEQUENCE 158 AA; 17374 MW; 7B69B684C1F1816 CRC64;
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Query Match 92.1%; Score 723; DB 1; Length 158;
Best Local Similarity 91.8%; Pred. No. 5,le-69;
Matches 134; Conservative 5; Mismatches 7; Indels 0; Gaps 0;

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QY 1 PALPDGSGGAPPGHFKPKRLYCKNGGFLRIHPDGVVDGVRKSDPHIKLOLAER 60
DB 13 PALPDGSGGAPPGHFKPKRLYCKNGGFLRIHPDGVVDGVRKSDPHIKLOLAER 72
QY 61 GVSSTKGVANRYLAKMEKEDGRLASCVTDECFEERLESNNNTYRSKRYTSMYVALKR 120
DB 73 GVSSTKGVANRYLAKMEKEDGRLALCAVECFEERLESNNNTYRSKRYTSMYVALKR 132
QY 121 TGOYKLGSKTGPQKALFLPMSAKS 146
DB 133 TGOYKLGSKTGPQKALFLPMSAKS 158
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RESULT 8
FGF2_MONDO
ID FGF2_MONDO STANDARD: PRT: 156 AA.
AC P48798;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
DE growth factor) (BFGF) (Prostatiotin).
GN FGF2.
OS Monodelphis domestica (Short-tailed grey opossum).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Metatheria; Didelphimorphia; Didelphidae; Monodelphis.
OX NCBI_TaxID=13616;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE-EYE;
RX MEDLINE=94296558; Pubmed=8024698;
RA Kuewitt D.F., Sabourin C.L.K., Sharburn T.E., Ley R.D.;
RT "Characterization of cDNA encoding basic fibroblast growth factor of
RT the marsupial Monodelphis domestica.";
RL DNA Cell Biol. 13:549-554(1994).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: Z15154; CAA78854.1; ALT-INIT.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IIL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IILHBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1 9
FT CHAIN 10 156 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 28 32 HEPARIN (POTENTIAL).
FT BINDING 117 120 HEPARIN (POTENTIAL).
SQ SEQUENCE 156 AA; 17303 MM; 7655FCC49BF1209 CRC64;

Query Match 91.7%; Score 719.5; DB 1; Length 156;
Best Local Similarity 92.5%; Pred. No. 1.2e-68;
Matches 136; Conservative 5; Mismatches 5; Indels 1; Gaps 1;

QY 1 PALPBD-GSGAAPPGHFDPKRLCKNGGFLRIHPDGRVGVREKSDPHIKLOQAEER 59
DB 10 PALSBDGGGGGAFPPGHFKDPKRLCKNGGFLRIHPDGRVGVREKSDPHIKLOQAE 69
QY 60 RGVASIKGVCANRYLAMKEDGRLLASCVTDECFEERLESNNYTYRSKRYTSWYALK 119
DB 70 RGVASIKGVCANRYLAMKEDGRLLASCVTDECFEERLESNNYTYRSKRYTSWYALK 129
QY 120 RTGQYKLGSKTGPQKAILFLPMASAKS 146
DB 130 RTGQYKLGSKTGPQKAILFLPMASAKS 156
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RESULT 9
FGF2_XENLA
ID FGF2_XENLA STANDARD: PRT: 155 AA.
AC P12226;
DT 01-OCT-1989 (Rel. 12, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
DE growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Anura; Mesobatrachia; Pipidae; Pipidae;
OC Xenopodinae; Xenopus.
OX NCBI_TaxID=8355;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89058621; Pubmed=3194757;
RA Kinselman D., Abraham J., Haaparanta T., Palisi T., Kirschner M.;
RT "The presence of fibroblast growth factor in the frog egg: its role
RT as a natural mesoderm inducer.";
RL Science 242:1053-1056(1988).
RN [2]
RN SEQUENCE OF 95-155 FROM N.A.
RP MEDLINE=88052890; Pubmed=3479265;
RX Kinselman D., Kirschner M.;
RA "Synergistic induction of mesoderm by FGF and TGF-beta and the
RT identification of an mRNA coding for FGF in the early Xenopus
RT embryo.";
RL Cell 51:869-877(1987).
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: M18067; AAA49726.1; -.
DR PIR: A29618; A29618.
DR PIR: A40117; A40117.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IIL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IILHBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1 9
FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
FT CONFLICT 111 111 MISSING (IN REF. 2).
SQ SEQUENCE 155 AA; 17241 MM; 036735C8063142FD CRC64;

Query Match 82.3%; Score 646; DB 1; Length 155;
Best Local Similarity 82.9%; Pred. No. 6.2e-61;
Matches 121; Conservative 9; Mismatches 16; Indels 0; Gaps 0;

QY 1 PALPEDGSGAAPPGHFDPKRLCKNGGFLRIHPDGRVGVREKSDPHIKLOQAEER 60
DB 10 PTESEDCGNTPTSPSGFKDPKRLCKNGGFLRIHNSDGRVDSRDKSDSHIKLOQAV 69
QY 61 GYVSIKGVCANRYLAMKEDGRLLASCVTDECFEERLESNNYTYRSKRYTSWYALK 120
DB 70 GYVSIKGVCANRYLAMKEDGRLLASCVTDECFEERLESNNYTYRSKRYTSWYALK 129
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OY 121 TGOYKLGSTGPGOKAIIFLPMSAKS 146
 DB 130 TGOYKNGSGTGPOKAIIFLPMSAKS 155

RESULT 10
 FGFL_MESAU STANDARD: PRT: 155 AA.

ID FGFL_MESAU STANDARD: PRT: 155 AA.
 AC P34004;
 DT 01-FEB-1994 (Rel. 28, Created)
 DT 01-FEB-1994 (Rel. 28, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF).
 DE FGFL OR FGF-1.
 GN FGFL OR FGF-1.
 OS Mesocricetus auratus (Golden hamster).
 OS Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
 OC Mesocricetus.
 OC NCBI_TaxID=10036;
 OX NCBI_TaxID=10036;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=90270291; PubMed=1693366;
 RA Hall J.A., Harris M.A., Malark M., Mansson P.E., Zhou H., Harris S.E.;
 RT "Characterization of the hamster Ddt-1 cell afgf/HBGF-1 gene and cDNA and its modulation by steroids.";
 RT J. Cell. Biochem. 43:17-26(1990).
 RL J. Cell. Biochem. 43:17-26(1990).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY THAN DOES BFGF.
 CC PIR: A60721; A60721.
 DR HSRP; P05230; 1RML.
 DR InterPro; IPR002209; HBGF_FGF.
 DR InterPro; IPR002348; IIL_HBGF.
 DR Pfam; PF00167; FGF; 1.
 DR PRINTS; PR00262; IILHBGF.
 DR PRODOM; PD000831; HBGF_FGF; 1.
 DR SMART; SM00442; FGF; 1.
 DR PROSITE; PS00247; HBGF_FGF; 1.
 DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 KW PROPEP 15
 FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
 FT BINDING 24 28 HEPARIN (POTENTIAL).
 FT BINDING 113 116 HEPARIN (POTENTIAL).
 SO SEQUENCE 155 AA; 17403 MW; 41B5EC760E412CC3 CRC64;

Query Match 50.4%; Score 396; DB 1; Length 155;
 Best Local Similarity 56.6%; Pred. No. 1.2e-34;
 Matches 77; Conservative 16; Mismatches 41; Indels 2; Gaps 1;

OY 13 PGHFRKPKRYCKNGEFLRHPDGRVDGVRKSDPHIKLOAEERGVSIRKVCANR 72
 DB 19 PGGNKKRKFLLYCSNGGHLRLIPDGTVDGTRSDQHIOLOSAESAGEVYIKGTETGO 78

OY 73 YLAMEDGLLASKCVTDCEFFERLESNNYTYRSRKT--SWYALKRTOYKIGSST 130
 DB 79 YLAMDITDGLYSQPPNECFLERLEENHYNTYSKHAERNWVGILKNGSCKRGKPT 138

OY 131 GPGOKAIIFLPMSAKS 146
 DB 139 HYGOKAIIFLPLPVSS 154

RESULT 11
 FGFL_HUMAN STANDARD: PRT: 155 AA.
 AC P05230; P07502;

DT 13-AUG-1987 (Rel. 05, Created)
 DT 13-AUG-1987 (Rel. 05, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF) (Beta-endothelial cell growth factor) (ECGF-beta).
 DE FGFL OR FGFA.
 GN Homo sapiens (Human).
 OS Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
 OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=86261805; PubMed=3523756;
 RA Jaye M., Howk R., Burgess W., Ricca G.A., Chiu I.-M., Ravera M.W., O'Brien S.J., Modi W.S., Maciag T., Drohan W.N.;
 RT "Human endothelial cell growth factor: cloning, nucleotide sequence, and chromosome localization.";
 RT Science 233:541-545(1986).
 RL [2]
 RN [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Brain stem;
 RX MEDLINE=89343957; PubMed=2474753;
 RA Wang W.P., Lehtoma K., Varban M.L., Krishnan I., Chiu I.M.;
 RT Cloning of the gene coding for human class I heparin-binding growth factor and its expression in fetal tissues.";
 RT Mol. Cell. Biol. 9:2387-2395(1989).
 RN [3]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Brain stem;
 RX MEDLINE=90265618; PubMed=1693186;
 RA Chiu I.M., Wang W.P., Lehtoma K.;
 RT "Alternative splicing generates two forms of mRNA coding for human heparin-binding growth factor 1.";
 RT Oncogene 5:755-762(1990).
 RN [4]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=90073637; PubMed=2590193;
 RA Mergia A., Tischer E., Graves D., Tumolo A., Miller J., Gospodarowicz D., Abraham J.A., Shipley G.D., Fiddes J.C.;
 RT "Structural analysis of the gene for human acidic fibroblast growth factor.";
 RT Biochem. Biophys. Res. Commun. 164:1121-1129(1989).
 RN [5]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=92019819; PubMed=1717925;
 RA Wang W.P., Quick D., Balcerzak S.P., Needleman S.W., Chiu I.M.;
 RT "Cloning and sequence analysis of the human acidic fibroblast growth factor gene and its preservation in leukemia patients.";
 RT Oncogene 6:1521-1529(1991).
 RN [6]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=92202857; PubMed=1372643;
 RA Li Y.L., Kha H., Golden J.A., Migchelsen A.A.J., Goetzel E.J., Turk E.J.;
 RT "An acidic fibroblast growth factor protein generated by alternate splicing acts like an antagonist.";
 RT J. Exp. Med. 175:1073-1080(1992).
 RN [7]
 RP SEQUENCE OF 1-154 FROM N.A.
 RX MEDLINE=94069734; PubMed=7504343;
 RA Zhao X.M., Yeoh T.K., Hiebert M., Frist W.H., Miller G.G.;
 RT "The expression of acidic fibroblast growth factor (heparin-binding growth factor-1) and cytokine genes in human cardiac allografts and T cells.";
 RT Transplantation 56:1177-1182(1993).
 RN [8]
 RP SEQUENCE OF 1-40 FROM N.A.
 RX MEDLINE=90365758; PubMed=2393407;
 RA Crumley G., Dionne C.A., Jaye M.;
 RT "The gene for human acidic fibroblast growth factor encodes two upstream exons alternatively spliced to the first coding exon.";
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 RA Gmez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
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 RL fibroblast growth factor.";
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 RL amino terminal sequences and specific mitogenic activities.";
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 RP MEDLINE=86275260; PubMed=3732516;
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 RT "Partial molecular characterization of endothelial cell mitogens from
 RL human brain: acidic and basic fibroblast growth factors.";
 RN FEBS Lett. 204:203-207(1986).
 RP X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS).
 RA MEDLINE=96194129; PubMed=8652350;
 RA Blaber M., Disalvo J., Thomas K.A.;
 RT "X-ray crystal structure of human acidic fibroblast growth factor.";
 RN Biochemistry 35:2086-2094(1996).
 RP MEDLINE=94358885; PubMed=7521397;
 RA Pineda-Lucena A., Jimenez M.A., Nieto J.L., Santoro J., Rico M.,
 RA Gmez-Gallego G.;
 RT "H-NMR assignment and solution structure of human acidic fibroblast
 RL growth factor activated by inositol hexasulfate.";
 RN J. Mol. Biol. 242:81-98(1994).
 RP MEDLINE=97107535; PubMed=8950275;
 RA Pineda-Lucena A., Jimenez M.A., Lozano R.M., Nieto J.L., Santoro J.,
 RA Rico M., Gmez-Gallego G.;
 RT "Three-dimensional structure of acidic fibroblast growth factor in
 RL solution: effects of binding to a heparin functional analog.";
 RN J. Mol. Biol. 264:162-178(1996).
 RP MEDLINE=98387896; PubMed=9719643;
 RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gmez-Gallego G.;
 RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
 RL 6-naphthalenetrisulfonate: a minimal model for the anti-tumoral
 RN action of suramin and suradiastat.";
 RP MEDLINE=98387896; PubMed=9719643;
 RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gmez-Gallego G.;
 RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
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 RN action of suramin and suradiastat.";
 RP MEDLINE=98387896; PubMed=9719643;
 RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gmez-Gallego G.;
 RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
 RL 6-naphthalenetrisulfonate: a minimal model for the anti-tumoral
 RN action of suramin and suradiastat.";
 RP MEDLINE=98387896

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DR EMBL; M13361; AAA79245.1; -
DR EMBL; X51943; CA836206.1; -
DR EMBL; M30492; AAAS2446.1; -
DR EMBL; M30490; AAAS2446.1; JOINED.
DR EMBL; M30491; AAAS2446.1; JOINED.
DR EMBL; M60515; AAAS1672.1; -
DR EMBL; M60516; AAAS1673.1; -
DR EMBL; M23087; AAAS2638.1; -
DR EMBL; M23086; AAAS2638.1; JOINED.
DR EMBL; S67291; AAB29057.2; -
DR EMBL; X65778; CAA46661.1; -
DR PIR; A23553; A23553.
DR PIR; A24243; A24243.
DR PIR; A24301; A24301.
DR PIR; A24662; A24662.
DR PIR; A24820; A24820.
DR PIR; A26386; A26386.
DR PIR; A33665; A33665.
DR PIR; S18217; S18217.
DR PDB; 2AFC; 15-OCT-95.
DR PDB; 1AXM; 22-APR-98.
DR PDB; 2AXM; 22-APR-98.
DR PDB; 1RML; 11-NOV-98.
DR MIM; J131220; -.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODom; PD000831; HBGF_FGF_1.
DR SMART; SM00442; HBGF_FGF_1.
DR PROSITE; PS00247; HBGF_FGF_1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
KT 3D-structure.
FT PROPEP 1 15
FT CHAIN 16 155
FT MOD_RES 2 2
FT BINDING 24 28
FT BINDING 113 116
SEQUENCE 155 AA; 17460 MW; F586E8BBFB09F1580 CRC64;

Query Match 49.2%; Score 386; DB 1; Length 155;
Best Local Similarity 55.9%; Pred. No. 1,3e+33;
Matches 76; Conservative 16; Mismatches 42; Indels 2; Gaps 1;

QY 13 PGHFHKDKRLRYLCNKGFFLRHPDGARYGVREKSDPHIKIQLQAEEGVAYSIKGCANR 72
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Db 19 PPGNKAKKKLLXCSNGSHFLRLPLPGVTYDGRDRSDQHIGQLSAESVEGYIIKSTEGQ 78
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QY 73 YLAKEEDGRLLASCAYTDECFEFERLESNNNTYRSRYT--SWYVALKRTGGYYLGSKT 130
| | | | | | : : || | | | | | | | | | : : | | : |
Db 79 YLANDTDDELTLGSOTPNNECLFLERLEENHYNTYISKKAHEKNMFVGILKMGSCKRGPRT 138
| | | | | | | | : |
QY 131 GPQOKALIFLPMSAKS 146
Db 139 HYQOKALIFLFPPVSS 154

RESULT 12
FGFLCHICK STANDARD; PRT; 155 AA.
AC P19596;
DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
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DE Heparin-binding growth factor I precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF) (Alpha-endothelial cell growth factor).
GN FGF1 OR FGF-1.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OC NCBI_TaxID=9031.
RN [1]
RN SEQUENCE FROM N.A.
RX MEDLINE-91347925; PubMed-1715259.
RA Schumacher H., Risau W.;
RT "Differentiating and mature neurons express the acidic fibroblast
RT growth factor gene during chick neural development.";
RL Development 111:1143-1154(1991).
RN [2]
RN SEQUENCE FROM N.A.
RA Martin G.R., Han J.K.;
RL Submitted (JUL-1995) to the EMBL/GenBank/DBJ databases.
RN [3]
RX MEDLINE-88296438; PubMed-3402441.
RA Risau W., Gautschi-Sova P., Boehlen P.;
RT "Endothelial cell growth factors in embryonic and adult chick brain
RT are related to human acidic fibroblast growth factor.";
RL EMBO J. 7:959-962(1988).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES BFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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DR EMBL; S63263; AAB19629.1; -.
DR EMBL; U31863; AAB80310.1; -.
DR EMBL; S63261; AAD13942.1; -.
DR PIR; S02639; S02639.
DR HSSP; P05230; 2AXM.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT CHAIN 1 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT CHAIN 16 155 ENDOTHelial CELL GROWTH FACTOR ALPHA.
FT CHAIN 22 155 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17322 MW; 8EDB70545E2B4365 CRC64;

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Query Match 48.9%; Score 383.5; DB 1; Length 155;
Best Local Similarity 54.5%; Pred. No. 2.4e-33;
Matches 78; Conservative 20; Mismatches 40; Indels 5; Gaps 2;

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OY 2 ALPEGGGSGAPPPGHPKPKRLYLCKNGGFFLRHPDGRVGVREKSDPHIKLQLAENGK 61
DB 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
DB 11 ALTERFG--LPLGNVKKPKLLKCGNGHFLILPDGKVDGRDRSDQIQQLQSLAEVDVG 67
OY 62 VSIKGVCAKNRYLAMEKDGRLIASKCVTDECFEERLESNNNTYRSKRYT--SWIVALK 119

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DB 68 EYVTKSTASGGYLAAMDNGILYGSQLPGECEFLERLEENHYNTYISKHADNMWFGVK 127
OY 120 RTGGYKLGSKRTGPGOKAILELPM 142
DB 128 KNGSKRGPRTHYGGKAILFLPL 150

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RESULT 13

ID	PROT_MOUSE	STANDARD;	PRT;	155 AA.
AC	P10935;			
DT	01-JUL-1989 (Rel. 11, Created)			
DT	01-JUL-1989 (Rel. 11, Last sequence update)			
DT	01-MAR-2002 (Rel. 41, Last annotation update)			
DE	Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast			
DE	growth factor) (AFGF).			
GN	FGF1 OR FGF-1 OR FGFA.			
OS	Mus musculus (Mouse), and			
OS	Rattus norvegicus (Rat).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.			
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RP	SEQUENCE FROM N.A.			
RC	SPECIES-Rat;			
RX	MEDLINE-89240051; PubMed-2470029;			
RA	Goodrich S., Yan G.C., Bahrenburg K., Mansson P.E.;			
RT	"The nucleotide sequence of rat heparin binding growth factor 1			
RT	(HBGF-1).";			
RL	Nucleic Acids Res. 17:2867-2867(1989).			
RN	[2]			
RP	SEQUENCE FROM N.A.			
RC	SPECIES-Mouse;			
RX	MEDLINE-90201563; PubMed-2318343;			
RA	Hebert J.M., Basilico C., Goldfarb M., Haub O., Martin G.R.;			
RT	"Isolation of cDNAs encoding four mouse FGF family members and			
RT	characterization of their expression patterns during embryogenesis.";			
RL	Dev. Biol. 138:454-463(1990).			
RN	[3]			
RP	SEQUENCE FROM N.A.			
RC	SPECIES-Mouse;			
RX	MEDLINE-97128312; PubMed-8972905;			
RA	Madial F., Hackshaw K.V., Chiu I.M.;			
RT	"Cloning and characterization of the mouse Fgf-1 gene.";			
RL	Gene 179:231-236(1996).			
RN	[4]			
RP	SEQUENCE FROM N.A.			
RC	SPECIES-Mouse; STRAIN-BALB/C;			
RX	MEDLINE-97094746; PubMed-8939980;			
RA	Alam K.Y., Frostholt A., Hackshaw K.V., Evans J.E., Rotter A.,			
RA	Chiu I.M.;			
RT	"Characterization of the 1b promoter of fibroblast growth factor 1			
RT	and its expression in the adult and developing mouse brain.";			
RL	J. Biol. Chem. 271:30263-30271(1996).			
CC	-1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS			
CC	IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN			
CC	VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND			
CC	CONCENTRATION OF THESE 2 GROWTH FACTORS.			
CC	-1- SUBUNIT: MONOMER.			
CC	-1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.			
CC	-----			
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CC	or send an email to license@isb-sib.ch).			
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DR	EMBL; X14232; CAA32448.1; -. DR EMBL; M30641; AAA37618.1; -. DR EMBL; U36459; AAC52969.1; -.			

RT "Nucleotide sequence of bovine acidic fibroblast growth factor cDNA.";
 RL Nucleic Acids Res. 16:10913-10913(1988).
 RN [2]
 RC SEQUENCE FROM N.A.
 RX MEDLINE-89078619; PubMed-2849564;
 RA Alterio J., Hailley C., Brou C., Soussi T., Courtois Y., Laurent M.;
 RT "Characterization of a bovine acidic FGF cDNA clone and its
 RT expression in brain and retina.";
 RL FEBS Lett. 242:41-46(1988).
 RN [3]
 RP SEQUENCE OF 2-155.
 RX MEDLINE-87016918; PubMed-3532107;
 RA Burgess W.H., Melhman T., Marshak D.R., Fraser B.A., Maciag T.;
 RT "Structural evidence that endothelial cell growth factor beta is the
 RT precursor of both endothelial cell growth factor alpha and acidic
 RT fibroblast growth factor.";
 RL Proc. Natl. Acad. Sci. U.S.A. 83:7216-7220(1986).
 RN [4]
 RP SEQUENCE OF 2-155.
 RX MEDLINE-87026586; PubMed-3768327;
 RA Crabb J.W., Ames L.G., Carr S.A., Johnson C.M., Roberts G.D.,
 RT Bordoli R.S., McKeenan W.L.;
 RT "Complete primary structure of prostatin, a prostate epithelial
 RT cell growth factor.";
 RL Biochemistry 25:4988-4993(1986).
 RN [5]
 RP SEQUENCE OF 16-155.
 RX MEDLINE-86070224; PubMed-4071057;
 RA Gimenez-Gallego G., Rodkey J., Bennett C., Rios-Candelore M.,
 RA Disalvo J., Thomas K.;
 RT "Brain-derived acidic fibroblast growth factor: complete amino acid
 RT sequence and homologues.";
 RL Science 230:1385-1388(1985).
 RN [6]
 RP SEQUENCE OF 16-44, AND COMPOSITION.
 RX MEDLINE-86055750; PubMed-4065099;
 RA Boellgen P., Esch F., Balrd A., Gospodarowicz D.;
 RT "Acidic fibroblast growth factor (FGF) from bovine brain:
 RT amino-terminal sequence and comparison with basic FGF.";
 RL EMBO J. 4:1951-1956(1985).
 RN [7]
 RP SEQUENCE OF 16-56 FROM N.A.
 RX MEDLINE-86261806; PubMed-2425435;
 RA Abraham J.A., Merz A., Whang J.L., Tumolo A., Friedman J.,
 RA Hjerrild K.A., Gospodarowicz D., Fiddes J.C.;
 RT "Nucleotide sequence of a bovine clone encoding the angiogenic
 RT protein, basic fibroblast growth factor.";
 RL Science 233:545-548(1986).
 RN [8]
 RP SEQUENCE OF 16-45.
 RX MEDLINE-89231704; PubMed-2714282;
 RA Quinkler W., Maasberg M., Bernotat-Danielowski S., Luethe N.,
 RA Sharma H.S., Schaper W.;
 RT "Isolation of heparin-binding growth factors from bovine, porcine and
 RT canine hearts.";
 RL Eur. J. Biochem. 181:67-73(1989).
 RN [9]
 RP SEQUENCE OF 1-18 FROM N.A.
 RA Philippe J.M., Renaud F., Desset S., Laurent M.;
 RL Submitted (JUL-1992) to the EMBL/GenBank/DBJ databases.
 RN [10]
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 RX MEDLINE-91095983; PubMed-1702556;
 RA Zhu X., Komiya H., Chitrino A., Faham S., Fox G.M., Arakawa T.,
 RA Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth
 RT factors.";
 RL Science 251:90-93(1991).
 CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
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 CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
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 CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC -----
 CC EMBL: M13439; AAA30516.1; -;
 CC EMBL: X13221; CAA31610.1; -;
 CC EMBL: X14032; CAA32192.1; -;
 CC EMBL: M35608; AAA30517.1; -;
 CC EMBL: X66446; CAA47063.1; -;
 CC EMBL: M97660; AAA30563.1; -;
 CC EMBL: M97661; AAA30564.1; -;
 CC PIR: A01385; GKBOA.
 CC PIR: A25043; A25043.
 CC PIR: B25043; B25043.
 CC PIR: C25043; C25043.
 CC PIR: A24477; A24477.
 CC PIR: B24663; B24663.
 CC PIR: S02102; S02102.
 CC PDB: IBAF; 3I-OCT-93.
 CC PDB: IAFG; 3I-OCT-93.
 CC InterPro: IPR002309; HBGF_FGF.
 CC InterPro: IPR002348; ILL_HBGF.
 CC Pfam: PF00167; FGF; 1.
 CC PRINTS: PR00262; ILL_HBGF.
 CC ProDom: PD000831; HBGF_FGF; 1.
 CC SMART: SM00442; FGF; 1.
 CC PROSITE: PS00247; HBGF_FGF; 1.
 CC Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
 CC 3D-structure.
 CC KW PROPEP 1 15
 CC FT CHAIN 2 155
 CC FT CHAIN 16 155
 CC FT CHAIN 22 155
 CC FT MOD_RES 2 2
 CC FT BINDING 24 28
 CC FT STRAND 27 31
 CC FT TURN 32 34
 CC FT STRAND 37 40
 CC FT TURN 42 43
 CC FT STRAND 46 49
 CC FT HELIX 55 57
 CC FT STRAND 59 61
 CC FT STRAND 69 69
 CC FT STRAND 71 73
 CC FT STRAND 79 82
 CC FT TURN 84 85
 CC FT STRAND 87 91
 CC FT HELIX 96 98
 CC FT STRAND 100 100
 CC FT STRAND 103 104
 CC FT TURN 106 107
 CC FT STRAND 110 111
 CC FT STRAND 113 114
 CC FT TURN 116 121
 CC FT STRAND 123 123
 CC FT STRAND 126 126
 CC FT TURN 128 129
 CC FT STRAND 132 132
 CC FT STRAND 134 134
 CC FT HELIX 135 137
 CC FT TURN 140 141
 CC FT TURN 144 145
 CC FT STRAND 147 150
 CC -----
 CC ENDOTHELIAL CELL GROWTH FACTOR BETA.
 CC HEPARIN-BINDING GROWTH FACTOR 1.
 CC ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
 CC ACETYLATION.
 CC HEPARIN (POTENTIAL).
 CC HEPARIN (POTENTIAL).

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:13 ; Search time 78.17 Seconds
(without alignments)
323.107 Million cell updates/sec

Title: US-09-802-365-4

Perfect score: 785
1 PALPEDGSGGAFPPGHFKDP.....GSKTGPGRKAILFLPMSAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :

SPREMBL_19:*
1: sp.archaea:*
2: sp.bacteria:*
3: sp.fungi:*
4: sp.human:*
5: sp.invertebrate:*
6: sp.mammal:*
7: sp.mhc:*
8: sp.organelle:*
9: sp.phage:*
10: sp.plant:*
11: sp.podent:*
12: sp.virus:*
13: sp.vertebrate:*
14: sp.unclassified:*
15: sp.rvirus:*
16: sp.bacteriap:*
17: sp.archeap:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	785	100.0	196	4 P78443	P78443 homo sapien
2	741	94.4	153	11 Q925A3	Q925A3 mus musculu
3	701	89.3	170	11 Q60487	Q60487 cavia porce
4	682	86.9	130	6 O77767	O77767 canis fami1
5	667	85.0	155	13 Q90Y92	Q90Y92 cynops pyrr
6	585	74.5	111	6 Q9BDX1	Q9BDX1 macaca mula
7	567	72.2	125	13 Q98ND8	Q98ND8 cynops pyrr
8	561	71.5	108	6 Q9N1S7	Q9N1S7 capreolus c
9	490	62.4	109	11 Q925A1	Q925A1 mus musculu
10	486	61.9	112	11 Q925A2	Q925A2 mus musculu
11	476	60.6	101	13 P79706	P79706 cynops pyrr
12	468.5	59.7	146	13 Q07659	Q07659 gallus gall
13	341	43.4	76	6 Q9N0V2	Q9N0V2 ovis aries
14	292	37.2	106	6 Q9N1S8	Q9N1S8 capreolus c
15	287	36.6	114	4 Q00527	Q00527 homo sapien
16	287	36.6	114	4 Q16443	Q16443 homo sapien

ALIGNMENTS

17	249	31.7	196	13 Q9YH31	Q9YH31 notophthalm
18	245	31.2	124	13 Q90X05	Q90X05 ambystoma m
19	229	29.2	206	13 Q9YGD8	Q9YGD8 oncorhynchu
20	224	28.5	111	13 Q90X01	Q90X01 ambystoma m
21	215	27.4	208	6 Q95112	Q95112 sus scrofa
22	213	27.1	191	13 Q9DFC9	Q9DFC9 brachydanio
23	208	26.5	208	13 Q9PYV1	Q9PYV1 xenopus lae
24	208	26.2	207	11 Q9ESL9	Q9ESL9 mus musculu
25	205.5	26.2	207	11 Q9ESL8	Q9ESL8 mus musculu
26	205.5	26.2	207	11 Q9ER05	Q9ER05 mus musculu
27	204	26.0	212	11 Q9EST9	Q9EST9 rattus norv
28	203	25.9	208	6 Q9SK97	Q9SK97 macaca fasc
29	202.5	25.8	212	13 Q42407	Q42407 gallus gall
30	195.5	24.9	134	13 Q90X03	Q90X03 ambystoma m
31	193.5	24.6	213	6 Q9N1B9	Q9N1B9 ovis aries
32	193	24.6	208	4 Q96P59	Q96P59 homo sapien
33	191.5	24.4	186	6 Q95147	Q95147 mustela vis
34	189.5	24.1	237	13 Q91A16	Q91A16 gallus gall
35	189	24.0	112	13 Q90XP9	Q90XP9 ambystoma m
36	188.5	24.0	252	11 Q89096	Q89096 rattus norv
37	188.5	24.0	253	13 Q91A15	Q91A15 gallus gall
38	185.5	23.6	185	11 Q9ERN5	Q9ERN5 rattus norv
39	180.5	23.0	181	11 Q924B4	Q924B4 rattus norv
40	179.5	22.9	127	4 Q99517	Q99517 homo sapien
41	178.5	22.7	302	11 Q9CSX5	Q9CSX5 mus musculu
42	175.5	22.4	199	13 Q91A13	Q91A13 gallus gall
43	173.5	22.1	245	13 Q9W6A2	Q9W6A2 gallus gall
44	172.5	22.0	181	13 Q91A17	Q91A17 gallus gall
45	171	21.8	243	13 Q9W6A1	Q9W6A1 gallus gall

RESULT 1
ID P78443 PRELIMINARY; PRT; 196 AA.
AC P78443;
DT 01-MAY-1997 (TREMBLrel. 03, Created)
DT 01-MAY-1997 (TREMBLrel. 03, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE 21 KDA BASIC FIBROBLAST GROWTH FACTOR (BFGF).
OS Homo sapiens (Human).
GN FGF2.
NC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
CC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89184522; PubMed=2538817;
RA Prats H., Kaghad M., Prats A.C., Klagsbrun M., Lelias J.M.,
R Thomsen E.J.;
RA Llanzun P., Chalou P., Tauber J.P., Amalric F., Smith J.A., Caput D.;
RT "High molecular mass forms of basic fibroblast growth factor are
RT initiated by alternative CUG codons.";
RL Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).
RN [2]
RP SEQUENCE OF 81-168 FROM N.A.
RX MEDLINE=93038590; PubMed=1417798;
RA Watson R., Anthony F., Pickett M., Lambden P., Masson G.M.,
R Thomas E.J.;
RT "Reverse transcription with nested polymerase chain reaction shows
RT expression of basic fibroblast growth factor transcripts in human
RT granulosa and cumulus cells from in vitro fertilisation patients.";
RL Biochem. Biophys. Res. Commun. 187:1227-1231(1992).
DR EMBL: J04513; AA052532.1; -;
DR EMBL: S47380; A013853.1; -;
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBG_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF. 1.
DR PRINTS: PR00262; ILHBGF.
DR ProDom: PD000831; HBG_FGF. 1.
DR SMART; SM00442; FGF. 1.

DR PROSITE: PS00247; HBG_FGF; 1.
SQ SEQUENCE 196 AA; 21203 MW; D6B5447137E60343 CRC64;

Query Match 100.0%; Score 785; DB 4; Length 196;
Best Local Similarity 100.0%; Pred. No. 3.2e-78;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGSGAPPPGFKPKRLYCKNGGFFLRHPDGVNDGVREKSDPHIKLOLAER 60
DB 51 PALPEDGSGAPPPGFKPKRLYCKNGGFFLRHPDGVNDGVREKSDPHIKLOLAER 110
QY 61 GVAISIKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSKRYTSMYVALKR 120
DB 111 GVAISIKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSKRYTSMYVALKR 170
QY 121 TGOYKLGSKTGPGRKAILFLPMSAKS 146
DB 171 TGOYKLGSKTGPGRKAILFLPMSAKS 196

RESULT 2
Q925A3 PRELIMINARY; PRT: 153 AA.
AC Q925A3;
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
CN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sclurognathi; Muridae; Murinae; Mus.
OX NCBI_Taxid=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RA Dicks R.P., Gilep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RT expressed in mouse embryos.";
RL Submitted (FEB-2001) to the EMBL/Genbank/DBJ databases.
DR EMBL: AY027551; AAK52308.1; -
SQ SEQUENCE 153 AA; 17024 MW; AD8163CD8FA2RAAB CRC64;

Query Match 94.4%; Score 741; DB 11; Length 153;
Best Local Similarity 95.9%; Pred. No. 1.6e-73;
Matches 140; Conservative 4; Mismatches 0; Indels 2; Gaps 2;

QY 1 PALPEDGSGAPPPGFKPKRLYCKNGGFFLRHPDGVNDGVREKSDPHIKLOLAER 60
DB 10 PALPEDGGA-AEPPGHFKPKRLYCKNGGFFLRHPDGVNDGVREKSDPHIKLOLAER 68
QY 61 GVAISIKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSKRYTSMYVALKR 120
DB 69 GVAISIKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSKRYTSMYVALKR 127
QY 121 TGOYKLGSKTGPGRKAILFLPMSAKS 146
DB 128 TGOYKLGSKTGPGRKAILFLPMSAKS 153

RESULT 3
Q60487 PRELIMINARY; PRT: 170 AA.
AC Q60487;
DT 01-NOV-1996 (TREMBLrel. 01, Created)
DT 01-MAY-2000 (TREMBLrel. 13, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2 (FGF-2) (FIBROBLAST GROWTH FACTOR, BASIC)
DE (BFGF) (HEPARIN-BINDING GROWTH FACTOR 2) (HBGF-2) (PROSTATROPIN)
DE (PROSTATIC GROWTH FACTOR) (FRAGMENTS).
GN FGF2.

OS Cavia porcellus (Guinea pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Hystriognathi; Cavidae; Cavia.
OX NCBI_Taxid=10141;
RN [1]
RP SEQUENCE OF 53-170 FROM N.A.
RC TISSUE=PROSTATE;
RA Ricciardelli C.;
RL Submitted (JAN-1996) to the EMBL/Genbank/DBJ databases.
RN [2]
RP SEQUENCE OF N-TERMINUS, PARTIAL SEQUENCE, AND ALTERNATIVE SPLICING.
RX MEDLINE=89273588; PubMed=2730645;
RA Sommer A., Moscatelli D., Rifkin D.B.;
RT "An amino-terminally extended and post-translationally modified form
RT of a 25kD basic fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 160:1267-1274(1989).
RN [3]
RP PARTIAL SEQUENCE, AND METHYLATION.
RX MEDLINE=91322114; PubMed=1713785;
RA Burgess W.H., Bizik J., Mehlman T., Quarto N., Rifkin D.B.;
RT "Direct evidence for methylation of arginine residues in high
RT molecular weight forms of basic fibroblast growth factor.";
RL Cell Regul. 2:87-93(1991).
RN [4]
RP CHARACTERIZATION.
RC TISSUE=BRAIN;
RX MEDLINE=87289686; PubMed=3475702;
RA Moscatelli D., Joseph silverstein J., Manejias R., Rifkin D.B.;
RT "Mr 25,000 heparin-binding protein from guinea pig brain is a high
RT molecular weight form of basic fibroblast growth factor.";
RL Proc. Natl. Acad. Sci. U.S.A. 84:5778-5782(1987).
RN [5]
RP FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROTROPHIC
RP FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
RP PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
RP HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR
RP MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
RP PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
RP SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
RP ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
RP SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGF1 AND AT LEAST
RP ONE HEPARAN SULFATE (BY SIMILARITY).
RP ALTERNATIVE PRODUCTS: AT LEAST TWO ISOFORMS: 18 KDA AND 25 KDA
RP (SHOWN HERE); MAY BE PRODUCED BY USE OF ALTERNATIVE TRANSLATION
RP INITIATION SITES. BOTH FORMS ARE ACTIVE.
RP PTM: THE N-TERMINAL OF ISOFORM 18 KDA IS BLOCKED (PROBABLE).
RP SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
RP CAUTION: THIS IS A CONCEPTUAL TRANSLATION; MANY FRAMESHIFTS WERE
RP INTRODUCED FROM RESIDUES 77, 88, 93 AND 149 DOWNWARD TO EXTEND THE
RP SIMILARITY TO THE HUMAN SEQUENCE AS WELL AS ON THE BASIS OF
RP PARTIAL AMINO-ACID SEQUENCING.
DR EMBL: L75974; AAB85394.1; ALT_FRAME.
DR HSSP: P09038; 1BLA.
DR InterPro: IPR002209; HBG_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBG_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBG_FGF; 1.
DR Growth factor; Mitogen; Vascularization; Heparin-binding;
KW Alternative initiation; Methylation; Phosphorylation;
KW Developmental protein.
FT NON_TER 1
FT NON_CONS 15
FT CHAIN <1 170
FT CHAIN 22 170
FT INT_MET 22 22
FT DOMAIN 11 14
FT NON_CONS 50 51
FT SITE 61 63
FT SITE 103 105
FT BINDING 50 51
FT BINDING 105 105
FT CELL ATTACHMENT SITE (POTENTIAL).
FT CELL ATTACHMENT SITE (POTENTIAL).
FT HEPARIN (BY SIMILARITY).
FT HEPARIN (BY SIMILARITY).

03:35 2002

SITE
BINDING

(Rhesus macaque).
:zoa; Chordata; Craniata; Vertebrata; Euteleostomi;
:ria; Primates; Catarrhini; Cercopithecoidea;
a; Macaca.

4;

N.A.

Sekhon N., Keller J.K., Spindel E.R.;

RT "Alterations in Collagen and Elastin Gene Expression in Fetal

RT Pulmonary Vessels in Monkeys Following Prenatal Nicotine Exposure: A

RT Possible Role of alpha Nicotinic Acetylcholine Receptor in Persistent

RT Pulmonary Hypertension.";

RL Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.

DR EMBL; AF251270; AAK37962.1; -.

DR HSSP; P09038; 2FGF.

DR InterPro; IPR002209; HBG_FGF.

DR Pfam; PF00167; FGF.1.

DR PRINTS; PR00262; ILHGBF.

DR PRODOM; PD000831; HBG_FGF; 1.

DR SMART; SM00442; FGF.1.

DR PROSITE; PS00247; HBG_FGF; 1.

FT NON_TER 1 1

FT NON_TER 1 1

SO SEQUENCE 111 AA; 12633 MW; EC0967A5261F5487 CRC64;

Query Match

Best Local Similarity 74.5%; Score 585; DB 6; Length 111;

Matches 111; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 34 IHDPGRVDGVRKSDPHIKIQLQAEERGVVSISIKVCANRYLAMEKEDGRLLASKCVTDEC 93
AC 098TD8; PRELIMINARY; PRT; 125 AA.

DB 1 IHDPGRVDGVRKSDPHIKIQLQAEERGVVSISIKVCANRYLAMEKEDGRLLASKCVTDEC 60

QY 94 FFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFLPMSA 144
DB 61 FFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFLPMSA 111

RESULT 7
098TD8 PRELIMINARY; PRT; 125 AA.

AC 098TD8; PRELIMINARY; PRT; 125 AA.

DT 01-JUN-2001 (TREMBlrel. 17, Created)

DT 01-JUN-2001 (TREMBlrel. 17, Last sequence update)

DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)

DE FIBROBLAST GROWTH FACTOR-2 (FRAGMENT).

GN FGF-2.

OS Cynops pyrrhogaster (Japanese common newt).

OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;

OC Amphibia; Batrachia; Caudata; Salamandroidae; Salamandridae; Cynops.

OX NCBI_TaxID=8330;

RN [1]

RP SEQUENCE FROM N.A.

RA Mizuno N., Hayashi T., Kondoh H., Okamoto M.;

RT "Cynops fibroblast growth factor-2.";

RL Submitted (OCT-2000) to the EMBL/GenBank/DBJ databases.

DR EMBL; AB049625; BAB40835.1; -.

DR HSSP; P09038; 1BFF.

DR InterPro; IPR002209; HBG_FGF.

DR InterPro; IPR002348; IL1_HBG.

DR Pfam; PF00167; FGF.1.

DR PRINTS; PR00262; ILHGBF.

DR PRODOM; PD000831; HBG_FGF; 1.

DR SMART; SM00442; FGF.1.

DR PROSITE; PS00247; HBG_FGF; 1.

FT NON_TER 1 1

FT NON_TER 1 1

SO SEQUENCE 125 AA; 14244 MW; 5C27F41DC6E60C13 CRC64;

Query Match 72.2%; Score 567; DB 13; Length 125;

Best Local Similarity 87.1%; Pred. No. 1.5e-54;

Matches 108; Conservative 7; Mismatches 9; Indels 0; Gaps 0;

QY 23 LYCKNGGFFLRHDPGRVDGVRKSDPHIKIQLQAEERGVVSISIKVCANRYLAMEKEDGR 82

DB 2 LYCKNGGFFLRHDPGRVDGVRKSDPHIKIQLQAEERGVVSISIKVCANRYLAMEKEDGR 61

QY 83 LASKCVTDECFFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFLP 142

DB 62 MALKMTIDECFFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFLP 121

QY 143 SAKS 146

DB 122 SAKS 125

RESULT 8

09N1S7 PRELIMINARY; PRT; 108 AA.

AC 09N1S7; PRELIMINARY; PRT; 108 AA.

DT 01-OCT-2000 (TREMBlrel. 15, Created)

DT 01-OCT-2000 (TREMBlrel. 15, Last sequence update)

DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)

DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).

GN BFGF.

OS Capreolus capreolus (Roe deer).

OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;

OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;

OC Cervidae; Odocoileinae; Capreolus.

OX NCBI_TaxID=9858;

RN [1]

RP SEQUENCE FROM N.A.

RA Tissue-Testis; PubMed-11078967;

RT "Detection of growth factors in the testis of roe deer (Capreolus

capreolus).";

RL Anim. Reprod. Sci. 64:65-75(2000).

DR EMBL; AF152587; AAF73226.1; -.

DR HSSP; P09038; 4FGF.

DR InterPro; IPR002209; HBG_FGF.

DR InterPro; IPR002348; IL1_HBG.

DR Pfam; PF00167; FGF.1.

DR PRINTS; PR00262; ILHGBF.

DR PRODOM; PD000831; HBG_FGF; 1.

DR SMART; SM00442; FGF.1.

DR PROSITE; PS00247; HBG_FGF; 1.

FT NON_TER 1 1

FT NON_TER 1 1

SO SEQUENCE 108 AA; 12399 MW; 6BC7B7244214567E CRC64;

Query Match 71.5%; Score 561; DB 6; Length 108;

Best Local Similarity 98.1%; Pred. No. 5.8e-54;

Matches 106; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 33 RIHPDGRVDGVRKSDPHIKIQLQAEERGVVSISIKVCANRYLAMEKEDGRLLASKCVTDEC 92

DB 1 RIHPDGRVDGVRKSDPHIKIQLQAEERGVVSISIKVCANRYLAMEKEDGRLLASKCVTDEC 60

QY 93 FFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFL 140

DB 61 FFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFL 108

RESULT 9

0925A1 PRELIMINARY; PRT; 109 AA.

AC 0925A1; PRELIMINARY; PRT; 109 AA.

DT 01-DEC-2001 (TREMBlrel. 19, Created)

DT 01-DEC-2001 (TREMBlrel. 19, Last sequence update)

DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)

DE FIBROBLAST GROWTH FACTOR 2.

GN FGF2.

```

OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RA Dicks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RT expressed in mouse embryos.";
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL; AY027358; AAK52310.1; -.
SQ SEQUENCE 109 AA; 12388 MM; 61074ADE3303C860 CRC64;

Query Match          62.4%; Score 490; DB 11; Length 109;
Best Local Similarity 97.9%; Pred. No. 3.7e-46;
Matches 94; Conservative 2; Mismatches 0; Indels 0; Gaps 0;

QY 51 IKLOAERGVVSIGVCANRYLAKMEDGRLASKCVTDECFEERLESNNYNTYRSRK 110
   |||||
DB 14 IKLOAERGVVSIGVCANRYLAKMEDGRLASKCVTDECFEERLESNNYNTYRSRK 73
   |||||

QY 111 YTSWVALKRTGQYKLGSKTGPQKAILFLPMSAKS 146
   |||||
DB 74 YSSWVALKRTGQYKLGSKTGPQKAILFLPMSAKS 109
   |||||

RESULT 10
Q925A2 PRELIMINARY; PRT; 112 AA.
AC Q925A2;
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RA Dicks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RT expressed in mouse embryos.";
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL; AY027357; AAK52309.1; -.
SQ SEQUENCE 112 AA; 12725 MM; B00557ABE0257C6B CRC64;

Query Match          61.9%; Score 486; DB 11; Length 112;
Best Local Similarity 97.9%; Pred. No. 1e-45;
Matches 93; Conservative 2; Mismatches 0; Indels 0; Gaps 0;

QY 52 KLOLAERGVVSIGVCANRYLAKMEDGRLASKCVTDECFEERLESNNYNTYRSRK 111
   |||||
DB 18 KLOLAERGVVSIGVCANRYLAKMEDGRLASKCVTDECFEERLESNNYNTYRSRK 77
   |||||

QY 112 TSWVALKRTGQYKLGSKTGPQKAILFLPMSAKS 146
   |||||
DB 78 SSWVALKRTGQYKLGSKTGPQKAILFLPMSAKS 112
   |||||

RESULT 11
P79706 PRELIMINARY; PRT; 101 AA.
AC P79706;
DT 01-MAY-1997 (TREMBLrel. 03, Created)
DT 01-MAY-1997 (TREMBLrel. 03, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE BASIC FGF (FRAGMENT).

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OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=EMBRYO;
RA Suzuki A.S., Tabata T., Sakaguchi K., Takabatake T., Takeshima K.,
RA Kaneda T.;
RT "Serial expression of the genes in a mesodermalizing ectoderms of
RT early Cynops gastrula.";
RL Submitted (NOV-1996) to the EMBL/GenBank/DBJ databases.
DR EMBL; D89443; BAA13958.1; -.
DR HSSP; P09038; 4FGF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILL_HBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1 1
FT NON_TER 101 101
SQ SEQUENCE 101 AA; 11907 MM; 74A16C866C1F457A CRC64;

Query Match          60.6%; Score 476; DB 13; Length 101;
Best Local Similarity 87.1%; Pred. No. 1.1e-44;
Matches 88; Conservative 7; Mismatches 6; Indels 0; Gaps 0;

QY 20 PKRLVCKNGGFRLRHPDGRVDGVRKSDPHIKILOAERGVVSIGVCANRYLAKMED 79
   |||||
DB 1 PKRLVCKNGGFRLRINSQKVDGAREKSDSYIKILOAERGVVSIGVCANRYLAKMED 60
   |||||

QY 80 GLLASKCVTDECFEERLESNNYNTYRSKRTSYVALKR 120
   |||||
DB 61 GLRLAKWITDCECFEERLESNNYNTYRSKRTSYVALKR 101
   |||||

RESULT 12
Q07659 PRELIMINARY; PRT; 146 AA.
AC Q07659;
DT 01-NOV-1996 (TREMBLrel. 01, Created)
DT 01-NOV-1996 (TREMBLrel. 01, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR.
GN BFGF.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RC MEDLINE=93246053; PubMed=7683281;
RA Bojca A.Z., Zeller R., Meijers C.;
RT "Expression of alternatively spliced bfgf first coding exons and
RT antisense mRNAs during chicken embryogenesis.";
RL Dev. Biol. 157:110-118(1993).
RN [2]
RP SEQUENCE OF 52-85 FROM N.A.
RC MEDLINE=90382254; PubMed=2401202;
RA Mitrani E., Gruenbaum Y., Shohat H., Ziv T.;
RT "Fibroblast growth factor during mesoderm induction in the early chick
RT embryo.";
RL Development 109:387-393(1990).
DR EMBL; M95706; AAA48616.1; -.
DR EMBL; X56804; CAA440139.1; -.
DR HSSP; P09038; 2BFH.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.

```


RT G to A on position 19 and transversion G to C on position 97."
RL Submitted (NOV-1999) to the EMBL/GenBank/DBJ databases.
DR EMBL: Y13468; CAA73868.1; "-
DR EMBL: A7250952; CAB61690.1; "-
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR Pfam; PF00167; FGF; 1.
DR ProDom; PD000831; HBGF_FGF; 1.
FT NON_TER 114 114
SQ SEQUENCE 114 AA: 11688 MW: 98DC6381C1960CID CRC64;

Query Match 36.6%; Score 287; DB 4; Length 114;
Best Local Similarity 100.0%; Pred. No. 7.5e-24;
Matches 50; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
OY 1 PALPEDGSGAGFPFGHFKDPKRLCYCKNGGFRLRIHPDGRVDGVRERKSDPH 50
|||||
DB 65 PALPEDGSGAGFPFGHFKDPKRLCYCKNGGFRLRIHPDGRVDGVRERKSDPH 114
|||||

Search completed: June 7, 2002, 14:46:13
Job time: 629 sec

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GenCore version 4.5
Copyright (c) 1993 - 2000 Compugen Ltd.

OM protein - protein search, using sw model

Run on: June 7, 2002, 14:35:33 ; Search time 93.91 Seconds
(without alignments)
183.329 Million cell updates/sec

Title: US-09-802-365-6
Perfect score: 828
Sequence: 1 MAAGSITTLPALPEDGSGA.....GPKTGPCQKAILFLPMsAKS 155

Scoring table:
BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 111073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A_Geneseq_032802:*

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2: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1981.DAT:*
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4: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1983.DAT:*
5: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1984.DAT:*
6: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1985.DAT:*
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9: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1988.DAT:*
10: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1989.DAT:*
11: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1990.DAT:*
12: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1991.DAT:*
13: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1992.DAT:*
14: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1993.DAT:*
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16: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1995.DAT:*
17: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1996.DAT:*
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19: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1998.DAT:*
20: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1999.DAT:*
21: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA2000.DAT:*
22: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA2001.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	828	100.0	155	8	AAp70671
2	828	100.0	155	22	AAE11975
3	825	99.6	155	18	AAW20029
4	817	98.7	155	8	AAp70301
5	817	98.7	155	10	AAp94038
6	817	98.7	155	11	AAI05314
7	817	98.7	155	13	AAI23232
8	817	98.7	155	14	AAI40159
9	817	98.7	155	16	AAI80777
10	817	98.7	155	16	AAI70204
11	817	98.7	155	16	AAI70823

12	817	98.7	155	18	AAW33338
13	817	98.7	155	18	AAW19595
14	817	98.7	155	19	AAV05456
15	817	98.7	155	19	AAW75712
16	817	98.7	155	19	AAW71379
17	817	98.7	155	19	AAW53023
18	817	98.7	155	20	AAW93380
19	817	98.7	155	21	AAI10298
20	817	98.7	155	21	AAV96873
21	817	98.7	155	21	AAV96893
22	817	98.7	155	21	AAV90411
23	817	98.7	155	21	AAV90448
24	817	98.7	155	21	AAV32334
25	817	98.7	155	22	AAI65648
26	817	98.7	155	22	AAE11976
27	817	98.7	155	22	AAI85813
28	817	98.7	155	22	AAI99918
29	817	98.7	155	22	AAI64317
30	817	98.7	155	22	AAI64847
31	817	98.7	155	22	AAI84597
32	817	98.7	155	22	AAV72909
33	817	98.7	155	22	AAI61662
34	817	98.7	155	22	AAI50274
35	817	98.7	157	8	AAp71085
36	817	98.7	158	18	AAW31664
37	817	98.7	158	22	AAU08594
38	817	98.7	158	22	AAU78316
39	817	98.7	158	22	AAU04006
40	817	98.7	165	11	AAI05787
41	817	98.7	210	11	AAI06685
42	817	98.7	210	22	AAI60695
43	817	98.7	210	22	AAI50299
44	817	98.7	210	22	AAI50706
45	817	98.7	211	11	AAI07076

ALIGNMENTS

RESULT 1				
AAp70671	AAp70671 standard; Protein; 155 AA.			
XX				
AC	AAp70671;			
XX				
DT	18-APR-1991 (first entry)			
XX				
DE	Sequence of bovine basic fibroblast growth factor (FGF).			
XX				
KW	Wound healing; tissue repair; tumour probe.			
XX				
OS	Bos taurus.			
XX				
FH	Key			
FT	Peptide			
FT	Protein			
XX				
PN	W08701728-A.			
XX				
PD	26-MAR-1987.			
XX				
PF	11-SEP-1986; 86WO-US01879.			
XX				
PR	30-MAY-1986; 86US-0869382.			
PR	12-SEP-1985; 85US-077521.			
PR	16-DEC-1985; 85US-0809163.			
XX				
PA	(BIOT-) BIOTECHN RES PARTNE.			
XX				
PI	Fiddes JC, Abraham JA;			
XX				
XX	WPI; 1987-093786/13.			
DR	N-PSDB; AAN71024.			

Human fibronectin
Biologically active
Fibronectin receptor
Fibronectin growth
18 kDa form of fib
Fibronectin growth
18 kD isoform of h
Fibronectin growth
Human fibronectin g
Human fibronectin g
FGF-2 (bFGF), SEQ
Human FGF-2 (bFGF)
Human fibroblast g
Human fibroblast g
Human fibroblast g
Human FGF-2 protei
Human FGF-2 protei
Heart muscle cell
Amino acid sequenc
Truncated form of
FGF2 protein. Hom
Human basic fibrob
Sequence of human
Leaderless protein
Human basic fibrob
Human basic fibrob
human fibroblast g
human fibroblast g
Human bFGF encoded
Recombinant basic
Human basic fibrob
Human fibroblast g
Human fibroblast g
Extended recombin

```
XX New DNA sequences encoding mammalian fibroblast growth factors -
PR used to construct long probes to screen human and bovine genomic
PR tissue repair and of probe for tumour testing
XX
PS Claim 11; Fig 3; 89pp; English.
XX
CC The N-terminal AA sequence of both acidic and basic bovine FGF are
CC used to construct long probes to screen human and bovine genomic
CC libraries for FGF genes. Isolated sequences are used in vector
CC construction etc. and used to transform CV-1 cells for FGF prodn.
XX
SQ Sequence 155 AA;

Query Match 100.0%; Score 828; DB 8; Length 155;
Best Local Similarity 100.0%; Pred. No. 9,2e-83;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAGSITTLPALPEDGSGAPPFGHKDPKRLYCKNGFFLRHPDGRVDGVREKSDPHI 60
DB 1 maagsitlpaipedgsgafppghfkdpkrllyckngfflrhpdyrvdyvrekspdh 60
QY 61 KIQLQAEEGVSSTIGVCANRYLAMKEGRLASCVDECFEPEERLESNNNTYRSRY 120
DB 61 KIQLQAEEGVSSTIGVCANRYLAMKEGRLASCVDECFEPEERLESNNNTYRSRY 120
QY 121 SSMYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
DB 121 sswyvalkrtgqyklgpktgpgqkallflpmsaks 155

RESULT 2
AAE11975
ID AAE11975 standard; Protein; 155 AA.
XX
AC AAE11975;
XX
DT 18-DEC-2001 (first entry)
XX
DE Bovine fibroblast growth factor-2 (FGF-2) #2.
XX
KM Bovine; therapy; erectile dysfunction; fibroblast growth factor-2;
KM epidermal growth factor; EGF; platelet derived growth factor; PDGF;
KM vascular endothelial growth factor; VEGF; tissue growth factor; TGF;
XX impotence; vasotrophic.
XX
OS Bos taurus.
XX
PN WO200168125-A2.
XX
PD 20-SEP-2001.
XX
PF 09-MAR-2001; 2001WO-US07702.
XX
PR 10-MAR-2000; 2000US-188480P.
PR 11-MAY-2000; 2000US-203415P.
XX
PA (CHIR ) CHIRON CORP.
XX
PI Whitehouse MJ;
XX
DR WPI; 2001-616273/71.
DR N-PSDB; AAD19522.
XX
PT Treating or preventing erectile dysfunction, comprises administering
PT growth factor, particularly fibroblast growth factor to blood vessels
PT in the penis, groin or leg
XX
PS Claim 6; Page 33; 35pp; English.
XX
CC The present invention relates to a method for treating or preventing
CC erectile dysfunction, comprising administering a fibroblast growth
```

```
CC factor (FGF), epidermal growth factor (EGF), platelet derived growth
CC factor (PDGF), vascular endothelial growth factor (VEGF) or tissue
CC growth factor (TGF). The invention is used to treat or prevent erectile
CC dysfunction, or impotence. The present sequence is a bovine FGF-2
CC protein.
XX
SQ Sequence 155 AA;

Query Match 100.0%; Score 828; DB 22; Length 155;
Best Local Similarity 100.0%; Pred. No. 9,2e-83;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAGSITTLPALPEDGSGAPPFGHKDPKRLYCKNGFFLRHPDGRVDGVREKSDPHI 60
DB 1 maagsitlpaipedgsgafppghfkdpkrllyckngfflrhpdyrvdyvrekspdh 60
QY 61 KIQLQAEEGVSSTIGVCANRYLAMKEGRLASCVDECFEPEERLESNNNTYRSRY 120
DB 61 KIQLQAEEGVSSTIGVCANRYLAMKEGRLASCVDECFEPEERLESNNNTYRSRY 120
QY 121 SSMYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
DB 121 sswyvalkrtgqyklgpktgpgqkallflpmsaks 155

RESULT 3
AAW20029
ID AAW20029 standard; Protein; 155 AA.
XX
AC AAW20029;
XX
DT 18-SEP-1997 (first entry)
XX
DE Recombinant bovine basic fibroblast growth factor.
XX
KM FGF; fibroblast growth factor; basic; acidic; wound healing;
KM neurodegenerative disease; Parkinson's; Alzheimer's disease;
KM bone fracture; biologically active; embolism.
XX
OS Bos taurus.
XX
PN US5604293-A.
XX
PD 18-FEB-1997.
XX
PF 12-SEP-1985; 85US-0775521.
XX
PR 15-MAY-1987; 87US-0050706.
PR 12-SEP-1985; 85US-0775521.
PR 16-DEC-1985; 85US-0809163.
PR 30-MAY-1986; 86US-0869382.
PR 30-MAR-1992; 92US-0860688.
PR 01-APR-1994; 94US-0221462.
XX
PA (SCIO-) SCIOS INC.
XX
PI Abraham JA, Fiddes JC;
XX
DR WPI; 1997-234676/21.
DR N-PSDB; AAT71236.
XX
PT New high purity, recombinant human basic fibroblast growth factor -
PT for promoting wound healing and treating neurodegenerative
PT diseases, suitable for production on large scale
XX
PS Example 5; Fig 3; 34pp; English.
```

XX AAW20029 is a recombinant bovine basic fibroblast growth factor (bFGF).
CC Recombinant bFGF is used to promote healing of wounds, bone fractures,
CC damaged myocardial tissue etc. and, since it increases neuronal
CC survival and promotes neurite outgrowth, may also be used in treatment
CC of neurological disorders such as Alzheimer's and Parkinson's diseases.
CC bFGF may also be used for detection of specific inhibitors; for
CC treatment of cell cultures in vitro before transplant and for inducing
CC release of tissue plasminogen activator or collagenase, e.g. for
CC treatment of a chronic tendency to form embolism. Recombinant bFGF can
CC be produced on a large scale.

SQ Sequence 155 AA;

Query Match 99.6%; Score 825; DB 18; Length 155;
Best Local Similarity 99.4%; Pred. No. 2e-82;
Matches 154; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 1 MAGSITTLPALPEDGSGAFPFGHFKDKRLCYCKNGGFELRHDPGRVDGVREKSDPHI 60
DB 1 maagsittlpaipedgsgafppghfkdkrlycknggfflrhpdgrvdgvreksdphl 60
OY 61 KIQLQAEERGVYSIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
DB 61 kqlqaeeergvysikgvcanrylamkedgrllaskcvdecffeerlesnnyntyrsky 120
OY 121 SSMYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
DB 121 tssyvalkrtgqyklgpktpgqkailflpmsaks 155

RESULT 4
AAP70301
ID AAP70301 standard; Protein; 155 AA.

XX AAP70301;

DT 05-JUN-1991 (first entry)

XX Sequence of human basic fibroblast growth factor (hbFGF).

XX Fibroblast growth promoter; mesoderm cell growth promoter;
KW wound healing.

XX Homo sapiens.

XX Key Location/Qualifiers

FT Peptide 1..9
FT Protein 10..155
FT /note="claimed"

XX EP237966-A.

XX 23-SEP-1987.

PF 12-MAR-1987; 87EP-0103601.

XX 29-SEP-1986; 86JP-0231428.

PR 14-MAR-1986; 86JP-0057919.

PR 09-APR-1986; 86JP-0082699.

PR 09-OCT-1986; 86JP-0241053.

XX (TAKE) TAKEDA CHEMICAL IND KK.

XX Kurokawa T, Sasada R, Igarashi K;

DR WPI; 1987-265363/38.

DR N-PSDB; AAN70494.
XX Human basic fibroblast growth factor - produced by recombinant
PT DNA techniques, useful for healing wounds, prophylaxis,
PI thrombosis and arteriosclerosis treatment, etc.

XX Disclosure; Fig 1; 38pp; English.

PS hbFGF is produced using cDNA prepd. from RNA isolated from M138 or
XX IMR90 human fibroblasts. hbFGF promotes growth of fibroblasts and
CC other mesoderm-derived cells and is useful for promoting healing of
CC wounds (eg burns), for prophylaxis and treatment of thrombosis and
CC arteriosclerosis, and as a promoter for cell culture.

SQ Sequence 155 AA;

Query Match 98.7%; Score 817; DB 8; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 1 MAGSITTLPALPEDGSGAFPFGHFKDKRLCYCKNGGFELRHDPGRVDGVREKSDPHI 60
DB 1 maagsittlpaipedgsgafppghfkdkrlycknggfflrhpdgrvdgvreksdphl 60
OY 61 KIQLQAEERGVYSIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
DB 61 kqlqaeeergvysikgvcanrylamkedgrllaskcvdecffeerlesnnyntyrsky 120
OY 121 SSMYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
DB 121 tssyvalkrtgqyklgsktpgqkailflpmsaks 155

RESULT 5
AAP4038
ID AAP4038 standard; Protein; 155 AA.

XX AAP4038;

DT 25-JUN-1990 (first entry)

XX Human basic fibroblast growth factor.

XX Basic fibroblast growth factor; pUC9-Tsfl1; pUC9delH3-pTSF-3.

XX Homo sapiens.

XX Key Location/Qualifiers

FT Misc-difference 78
FT /label=Cys
FT /note="Replaced by Ser or Ala"

FT Misc-difference 96
FT /label=Cys
FT /note="Replaced by Ser or Ala"

FT Misc-difference 128
FT /label=Lys
FT /note="Replaced by Ser or Glu"

FT Misc-difference 129
FT /label=Arg
FT /note="Replaced by Thr"

FT Misc-difference 138
FT /label=Lys
FT /note="Replaced by Ser"

FT Domain 128..138
FT /label=heparin-binding domain

XX EP298723-A.

XX 11-JAN-1989.

PF 06-JUL-1988; 88EP-0306158.

XX 07-JUL-1987; 87US-0070797.

XX (BIOT-) BIOTECN RES ASSOC.

XX Fiddes JC, Abraham JA, Protter A;

```
XX WPI; 1989-009785/02.
DR N-PSDB; AAN93087.
XX
PT Recombinant DNA encoding new fibroblast growth factor
PT analogues - useful eg for accelerating wound healing and
PT to control neovascularisation.
XX
XX Disclosure; d 1-2; 44pp; English.
XX
CC DNA encoding the sequence may be mutated to encode an analogue, of human
CC basic fibroblast growth factor (bFGF) bFGF-C78/96S, which has reduced
CC affinity for heparin. One or more positively-charged AAs in the heparin-
CC binding domain (Aas 128-138) are replaced by neutral or negatively-
CC charged residues as indicated in the feature table. A recombinant vector
CC (pUC9-TSEf1 or pUC9delH3-PTSE-3) contg. the mutated DNA can be used to
CC transform bacterial or mammalian host cells for prodn. of the analogue.
CC See also AAN94038.
XX
XX Sequence 155 AA;
SQ

Query Match 98.7%; Score 817; DB 10; Length 155;
Best Local Similarity 98.7%; Pred. No. 1,5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAASITTLPALPBDGSGAPFGPHFKDPKRLYCKNGGFFLRHHPDGRVDGVRKSDPHI 60
Db 1 maasitltpalpedgsgafppghfkdpkrlcycknggfflrhnpdgvdgvrksdph 60
QY 61 KLIQAEERGVSIKGCANRYLAMKEDGRLLASCVTDECFPERLESNNYNTYRSRKY 120
Db 61 klqiaeergvvsikgcanylamkedgrllaskvcvdecfferlesnnyntyrsky 120
QY 121 SSWYVALKRTGOYKLGPKTGPCKAILFLPMSAKS 155
Db 121 tswwyvalkrtgqyklgsktgpqkailflpmsaks 155

RESULT 6
AAR05314
ID AAR05314 standard; protein; 155 AA.
XX
AC AAR05314;
XX
DT 10-OCT-1990 (first entry)
XX
DE Human basic fibroblast growth factor (FGF).
XX
KW Fibroblast growth factor; FGF; yeast; ischaemia; ds.
XX
OS Synthetic.
XX
PN WO9005184-A.
XX
PD 17-MAY-1990.
XX
PE 03-NOV-1989; 89WO-0004821.
XX
PR 04-NOV-1988; 88US-0267408.
XX
PA (CHIR-) CHIRON CORP.
XX
PI Barr PJ;
XX
DR WPI; 1990-178825/23.
DR N-PSDB; AAO04716.
XX
PT yeast prodn. of human basic and acidic fibroblast growth factor -
PT with acetylated amino-terminal, useful eg. for treating cell
PT senescence, neuronal regression and cell death.
XX
PS Disclosure; ; P; English.
```

```
XX FGF have applications such as in vivo nerve regeneration, wound
CC repair ischaemia and corneal repair. They may also have therapeutic
CC uses in the CNS and PNS in treatment of cell death and neuronal
CC regression.
XX
XX Sequence 155 AA;
SQ

Query Match 98.7%; Score 817; DB 11; Length 155;
Best Local Similarity 98.7%; Pred. No. 1,5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAASITTLPALPBDGSGAPFGPHFKDPKRLYCKNGGFFLRHHPDGRVDGVRKSDPHI 60
Db 1 maasitltpalpedgsgafppghfkdpkrlcycknggfflrhnpdgvdgvrksdph 60
QY 61 KLIQAEERGVSIKGCANRYLAMKEDGRLLASCVTDECFPERLESNNYNTYRSRKY 120
Db 61 klqiaeergvvsikgcanylamkedgrllaskvcvdecfferlesnnyntyrsky 120
QY 121 SSWYVALKRTGOYKLGPKTGPCKAILFLPMSAKS 155
Db 121 tswwyvalkrtgqyklgsktgpqkailflpmsaks 155

RESULT 7
AAR22232
ID AAR22232 standard; protein; 155 AA.
XX
AC AAR22232;
XX
DT 23-JUN-1992 (first entry)
XX
DE bFGF truncated at its N-terminus.
XX
KW Basic fibroblast growth factor; adduct; heparin; heparan sulphate;
KW pepsin A; cathepsin D; wounds; burns.
XX
OS Synthetic.
XX
PN WO9202539-A.
XX
PD 20-FEB-1992.
XX
PE 30-JUL-1991; 91WO-EP01428.
XX
PR 02-AUG-1990; 90GB-0017008.
XX
PA (FARM ) FARMITALIA C ERBA SRL.
XX
PI Monsan P, Paul F, Betbeder D, Sarmientos P;
XX
DR WPI; 1992-080021/10.
XX
PT Prepn. of basic fibroblast growth factor - by forming adduct with
PT heparin or heparan sulphate and cleaning with pepsin A or
PT cathepsin D
XX
PS Claim 4; Page 27; 36pp; English.
XX
CC The peptide sequence was deduced from the synthetic DNA sequence
CC prepd. as described in EP-363675. E. coli cells transformed with the
CC synthetic DNA were lysed and the supernatant purified, giving a
CC 50:50 mixture of a 154 residue bFGF (2-155) having the amino acid
CC sequence of the 155 residue form (Abraham et al., Science, 233, 545-
CC 548, 1986) shown here but without the N-terminal Met; and a 153
CC residue bFGF (3-155). An adduct of bFGF formed with heparin or
CC heparan sulphate contg. the bFGF 9-10 Leu-Pro bond can be cleaved
CC with pepsin A or cathepsin D to cleave this bond and release a
CC peptide with the N-terminus be deleted up to and including residue
CC 9, sequentially. This cleavage method can be used to obtain a pure
CC form of the 146 amino acid bFGF (10-155) bFGF. The prod. can be used
```


DT 23-FEB-1998 (first entry)
XX Human fibronectin amino-terminal oligopeptide.
XX
XX
KM Amino-terminal; human fibronectin; target cell;
KM transfection; retroviral vector; gene therapy; cancer;
KM viral disease; acquired immunodeficiency syndrome; AIDS.
XX
OS Homo sapiens.
XX
PN W09718318-A1.
XX
PD 22-MAY-1997.
XX
PF 07-NOV-1996; 96MO-JP03254.
XX
PR 08-MAR-1996; 96JP-0051847.
PR 13-NOV-1995; 95JP-0294382.
XX
PA (TAKI) TAKARA SHUZO CO LTD.
XX
PI Asada K, Hashino K, Kato I, Koyama N, Uemori T;
PI Ueno T;
XX
DR WPI; 1997-289294/26.
XX
PT Method for increasing efficacy of gene transfer to target cell using
PT retrovirus - by infection of the target cell in the presence of a
PT substance which binds to the virus and a substance which binds to
PT the target cell
XX
PS Claim 41; Pages 93-94; 194pp; Japanese.
XX
CC The present sequence is a human fibronectin amino-terminal
CC oligopeptide, which was used in the development of a novel method
CC for increasing the efficiency of gene introduction into a target
CC cell using a retroviral vector. The method comprises carrying out
CC viral infection of the target cell in the presence of a retrovirus
CC and target cell binding substance or substances. The method can be
CC used to effectively introduce genes into target cells for the gene
CC therapy of cancer and viral diseases, e.g. AIDS.
XX
SQ Sequence 155 AA;

Query Match 98.7%; Score 817; DB 18; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGAFPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSPHI 60
Db 1 maagsittlpalpedgsgafppghfkdpkrlcycknggfflrhpdgrvdgvrksdphl 60

QY 61 KLOQAEEERGVSIRKVCANRYLAMKEDGRLLASKCYTDECFEERLESNNYNTYRSRY 120
Db 61 klqgaeeergvsvikvcanylamkedgrllaskcvtdcefferlesnnyntyrsrky 120

QY 121 SSWYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
Db 121 tswyvalkrtgqyklgsktgpqgkailflpmsaks 155

RESULT 13
AAW19595
ID AAW19595 standard; Protein; 155 AA.
XX
XX AAW19595;
AC
XX
DT 18-SEP-1997 (first entry)
XX
DE Biologically active recombinant basic fibroblast growth factor.
XX
XX FGF; fibroblast growth factor; basic; acidic; wound healing;
KW

KW neurodegenerative disease; Parkinson's; Alzheimer's disease;
KM bone fracture; biologically active; embolism.
XX
XX
XX Homo sapiens.
XX
FH Key
FT Peptide
FT
FT Protein
FT
XX
XX US5604293-A.
XX
XX 18-FEB-1997.
XX
XX
PF 12-SEP-1985; 85US-0775521.
XX
PR 15-MAY-1987; 87US-0050706.
PR 12-SEP-1985; 85US-0775521.
PR 16-DEC-1985; 85US-0809163.
PR 30-MAY-1986; 86US-0869382.
PR 30-MAR-1992; 92US-0860688.
PR 01-APR-1994; 94US-0221462.
XX
XX (SCIO-) SCIOS INC.
PI Abraham JA, Fiddes JC;
XX
XX WPI; 1997-234676/21.
DR N-PSDB; AAT71231.
XX
XX New h1gh purity, recombinant human basic fibroblast growth factor -
PT for promoting wound healing and treating neurodegenerative
PT diseases, suitable for production on large scale
XX
XX
PS Claim 2; Fig 4; 34pp; English.
XX
XX AAW19595 is a biologically active recombinant human basic fibroblast
CC growth factor (bFGF). The protein is free from all infectious
CC impurities, substances that normally accompany it and from
CC post-translational modification of Cys residues of native bFGF.
CC Recombinant bFGF is used to promote healing of wounds, bone fractures,
CC damaged myocardial tissue etc. and, since it increases neuronal survival
CC and promotes neurite outgrowth, may also be used in treatment of
CC neurological disorders such as Alzheimer's and Parkinson's diseases. bFGF
CC may also be used for detection of specific inhibitors, for treatment of
CC cell cultures in vitro before transplant and for inducing release of
CC tissue plasminogen activator or collagenase, e.g. for treatment of a
CC chronic tendency to form embolism. Recombinant bFGF can be produced on a
CC large scale.
XX
SQ Sequence 155 AA;

Query Match 98.7%; Score 817; DB 18; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGAFPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSPHI 60
Db 1 maagsittlpalpedgsgafppghfkdpkrlcycknggfflrhpdgrvdgvrksdphl 60

QY 61 KLOQAEEERGVSIRKVCANRYLAMKEDGRLLASKCYTDECFEERLESNNYNTYRSRY 120
Db 61 klqgaeeergvsvikvcanylamkedgrllaskcvtdcefferlesnnyntyrsrky 120

QY 121 SSWYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
Db 121 tswyvalkrtgqyklgsktgpqgkailflpmsaks 155

RESULT 14
AAW05456

```

ID  AAY05456 standard; protein; 155 AA.
XX
AC  AAY05456:
XX
DT  07-JUL-1999 (first entry)
XX
DE  Fibronectin receptor targeting HIV strain CH-271.
XX
KM  Fibronectin receptor; HIV, infection; therapy.
XX
OS  Unidentified.
XX
PN  JPI0029952-A.
XX
PD  03-FEB-1998.
XX
PF  16-JUL-1996; 96JP-0185893.
XX
PR  16-JUL-1996; 96JP-0185893.
XX
PA  (TAKI ) TAKARA SHUZO CO LTD.
XX
DR  WPI; 1998-163674/15.
XX
PT  Control of human immunodeficiency virus infection - using
XX  composition comprising replication defective HIV vector
XX
PS  Disclosure; Page 17; 24pp; Japanese.
XX
CC  This sequence represents a fibronectin receptor that can be used in
CC  the method of the invention. The method is for the control of human
CC  immunodeficiency virus (HIV) infection using a composition which
CC  comprises a functional substance which participates in the infection of
CC  HIV. The method is used to control HIV-infection.
XX
SQ  Sequence 155 AA:

Query Match          98.7%; Score 817; DB 19; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY  1 MAAGSITTLPALPEDGSGAFPFGHFKDPRKRLCKNGSGFRLRHDPGAVDGVREKSDPHI 60
    1 maagsittlpalpedgsgaifpgfhfkdkpkrlycknggfflrlnpdgvdgvreksdph1 60
DB  61 KIQQAERGQVSVIKGVCANRYLAMKEDGRLLASKVCVDECFPERLESNNYNTYRSRKY 120
    61 kIQqaerGvsvIKgvcAnrYlAmKedGrllAsKvcVdeCFperLesnNyntYrSkY 120
OY  121 SSMYVALKRTGQYKLGPTGPGOKAILFLPMsAKS 155
    :|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB  121 tsyvalkrtgqyklgptgpgokailflpmsaks 155

RESULT 15
AAW5712
ID  AAW5712 standard; Protein; 155 AA.
XX
AC  AAW5712:
XX
DT  07-DEC-1998 (first entry)
XX
DE  Fibroblast growth factor-2.
XX
KM  Fibroblast growth factor-2; FGF-2; basic fibroblast growth factor;
XX  bFGF; muten; protein engineering; heparin; thrombosis;
XX  thrombocytopenia; ophthalmic disorder; human; therapy.
XX
OS  Homo sapiens.
XX
FH  Key Location/Qualifiers
FT  Peptide 1..9

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FT  /label= Sig_peptide
FT  /note="amino acid residues -9 to -1"
FT  Protein
FT  10..155
FT  /label= Mat.protein
FT  /note="amino acid residues +1 to +145"
FT  Misc-difference 95
FT  /note="Phe-95 is replaced by another amino acid
FT  acid (Claim 3), preferably Ala, Phe, Ser,
FT  Gly, Met, Leu or Tyr, especially Ala, Gly
FT  or Ser"
FT  Misc-difference 96
FT  /note="Glu-96 may be replaced by another amino
FT  acid (Claim 7), preferably Ala, Gly or Ser"
FT  Misc-difference 101
FT  /note="Asn-101 may be replaced by another amino
FT  acid (Claim 2), preferably Ala, Phe, Ser,
FT  Gly, Met, Leu or Tyr, especially Ala, Gly
FT  or Ser"
FT  Misc-difference 104
FT  /note="Asn-104 may be replaced by another amino
FT  acid (Claim 1), preferably Ala, Phe, Ser,
FT  Gly, Met, Leu or Tyr, especially Ala, Gly
FT  or Ser"
XX  W09839436-A2.
XX  11-SEP-1998.
XX  03-MAR-1998; 98WO-JP00878.
XX  03-MAR-1997; 97US-0040785.
XX  (EISA ) EISAI CO LTD.
XX
PI  Kalyanaraman R, Kaval T, Zhu H;
XX  WPI; 1998-495843/42.
XX  N-PSDB; AAV47647.
XX
PT  Fibroblast growth factor muten and DNA - having reduced receptor
XX  binding and able to bind heparin, useful for treating and regulating
XX  heparin-related disorders e.g. thrombosis
XX
PS  Disclosure; Page 53; 71pp; English.
XX
CC  This is the amino acid sequence of fibroblast growth factor-2
XX  (FGF-2), or basic fibroblast growth factor (bFGF). Claimed DNA
XX  molecules of the invention encode FGF muten polypeptides (see
XX  AAW5711-20) that show reduced FGF receptor binding activity but
XX  which retain the ability to bind heparin. For FGF-2, amino acid
XX  residues 95, 101 or 104 are preferably replaced by other amino acid
XX  residues, with an optional further replacement of the Glu-96
XX  residue. The muten may be further modified by replacement of the
XX  Cys-78 and Cys-96 residues to reduce aggregation. The muten
XX  is obtained by site-specific or site-directed mutagenesis of FGF-2
XX  DNA, incorporation of the mutated DNA into a vector and expression
XX  in host cells. The FGF mutens are used to treat heparin-related
XX  disorders, such as excessive bleeding induced by heparin,
XX  ophthalmic disorders and heparin-associated thrombocytopenia and
XX  thrombosis. They may also be used for drug design, especially
XX  FGF-2 antagonists.
XX
SQ  Sequence 155 AA:

Query Match          98.7%; Score 817; DB 19; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY  1 MAAGSITTLPALPEDGSGAFPFGHFKDPRKRLCKNGSGFRLRHDPGAVDGVREKSDPHI 60
    1 maagsittlpalpedgsgaifpgfhfkdkpkrlycknggfflrlnpdgvdgvreksdph1 60
DB  61 KIQQAERGQVSVIKGVCANRYLAMKEDGRLLASKVCVDECFPERLESNNYNTYRSRKY 120

```

QY 61 KLOQAEBRGVSTIKVCANRYLAKEDGILLASKCVTDECFFPERLESNNYNTYRSRKY 120
Db 61 KIQIAEERGVSISIKYVCANRYLAMKEDGZLLASKCVLDECFFERLESNNYNTYRSRKY 120
QY 121 SSWYVALKRTGQYKISGPTGPGOKAILFLPMsAKS 155
Db 121 tswyvalKrtGqYKIsGtGpGKaIlFlpmsaks 155

Search completed: June 7, 2002, 14:35:40
Job time: 277 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:37:15 ; Search time 47.03 Seconds
(without alignments)
316.688 Million cell updates/sec

Title: US-09-802-365-6

Perfect score: 828
Sequence: 1 MAAGSITTPALPEDGSGA.....GPKTGPQAKILFLPMSAKS 155

Scoring table: BIOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 28338 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database :
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	828	100.0	157	1	GKBOB
2	817	98.7	210	2	A32398
3	796.5	96.2	154	2	A31674
4	781.5	94.4	154	2	C37360
5	781	94.3	146	1	S00185
6	770	93.0	189	2	A48834
7	758.5	91.6	169	2	S31622
8	736	88.9	137	2	I46711
9	685	82.7	155	1	A40117
10	466.5	56.3	125	2	A32484
11	427.5	51.6	155	1	A60721
12	419.5	50.7	155	2	A60130
13	418.5	50.5	155	1	A33665
14	413.5	49.9	155	2	S04147
15	413.5	49.9	155	2	D37360
16	412.5	49.8	152	2	JH0476
17	404.5	48.9	155	2	JW0055
18	402.5	48.6	155	1	GKBOA
19	262	31.6	194	1	I50710
20	252.5	30.5	206	1	TVNHUS
21	252	30.4	256	2	JC4627
22	250.5	30.3	264	2	A36207
23	250.5	30.3	266	2	S68144
24	249	30.1	220	2	I50588
25	245	29.6	208	2	S20102
26	245	29.6	208	2	S14192
27	244.5	29.5	206	2	JC4268
28	241	29.1	267	1	TVHUP5
29	238.5	28.8	202	1	TVMSHS

30	236	28.5	187	2	S23595	embryonic fibrobla
31	235.5	28.4	237	1	S39582	transforming prote
32	235	28.4	245	1	TVMST2	transforming prote
33	234	28.3	239	1	S04742	fibroblast growth
34	231.5	28.0	192	2	S54407	embryonic fibrobla
35	216	26.1	208	2	S66486	fibroblast growth
36	216	26.1	208	2	A48137	fibroblast growth
37	209	25.2	211	2	JC7353	fibroblast growth
38	207	25.0	208	2	JC7082	fibroblast somatot
39	206.5	24.9	207	2	JC5940	fibroblast growth
40	205.5	24.8	207	2	JC5941	fibroblast growth
41	204.5	24.7	194	2	I48610	keratinocyte growt
42	203	24.5	212	2	JC7511	keratinocyte growt
43	202.5	24.5	194	1	A36301	fibroblast growth
44	202.5	24.5	194	2	S26049	fibroblast growth
45	202.5	24.5	194	2	S49501	keratinocyte growt

ALIGNMENTS

RESULT 1

GKBOB
basic fibroblast growth factor precursor - bovine (fragment)
N:Alternate names: bFGF; Kidney-derived growth factor; prostatiropin
C:Species: Bos primigenius taurus (cattle)
C>Date: 13-Aug-1986 #sequence-revision 02-Jun-1995 #text-change 24-Nov-1999
C:Accession: A24663; A32878; A33784; A61550; A61551; A60310; A61094; A0186; A60316;
R:Abraham, J.A.; Mergia, A.; Whang, J.L.; Tumolo, A.; Friedmann, J.; Hjertild, K.A.; G
Science 233, 545-548, 1986
A:Title: Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic
A:Reference number: A94290; MUID:86261806
A:Accession: A24663

A:Molecule type: mRNA
A:Residues: 3-157 <AB>
A:Cross-references: GB:M13440; NID:g163049; PIDN:AAA30518.1; PID:g163050
A:Experimental source: pituitary gland
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Whang, J.L.; Friedmann, J.; Hjertild, K.A.; G
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organizat
A:Reference number: A90924; MUID:87217066
A:Accession: A32878

A:Molecule type: mRNA
A:Residues: 3-157 <AB>
A:Reference number: A33784; MUID:90121211
A:Accession: A33784

A:Molecule type: protein
A:Residues: 1-14 <MTL>
A:Note: demonstration of a possible alternative initiator or splice junction
R:Bercolini, J.; Hearn, M.T.W.
Mol. Cell. Endocrinol. 51, 187-199, 1987
A:Title: Isolation, characterization and tissue localisation of an N-terminal-truncat
A:Reference number: A61550; MUID:87247652
A:Accession: A61550

A:Molecule type: protein
A:Residues: 16-35 <BER>
R:ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
Mol. Cell. Endocrinol. 49, 189-194, 1987
A:Title: Isolation and partial characterization of basic fibroblast growth factor fro
A:Reference number: A61551; MUID:87162866
A:Accession: A61551

A:Molecule type: protein
A:Residues: 27-35, 'X', 37-41 <UE3>
A:Experimental source: testes
A:Note: this form appears to be identical to the renal form
R:ueno, N.; Baird, A.; Esch, F.; Shimasaki, S.; Ling, N.; Guillemin, R.
Regul. Pept. 16, 135-145, 1986
A:Title: Purification and partial characterization of a mitogenic factor from bovine
A:Reference number: A60310; MUID:87119165
A:Accession: A60310

A:Molecule type: protein
A:Residues: 23-35, 'X', 37-42 <UEN>
A:Experimental source: liver
R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
Biochem. Biophys. Res. Commun. 138, 580-588, 1986
A:Title: Isolation of an amino terminal extended form of basic fibroblast growth factor.
A:Reference number: A24819; MUID:86295737
A:Contents: annotation
A:Note: the amino end of this form was blocked; the peptide composition matched what was
R:Gospodarowicz, D.; Baird, A.; Cheng, J.; Lui, G.M.; Esch, F.; Bohnen, P.
Endocrinology 118, 82-90, 1986
A:Title: Isolation of fibroblast growth factor from bovine adrenal gland: physicochemical
A:Reference number: A61094; MUID:8601530
A:Accession: A61094
A:Molecule type: protein
A:Residues: 12-25, 27-35, 'X', 37-40 <GOS>
A:Experimental source: adrenal gland
R:Esch, F.; Baird, A.; Ling, N.; Ueno, N.; Hill, F.; Denoroy, L.; Klepper, R.; Gospodarc
Proc. Natl. Acad. Sci. U.S.A. 82, 6507-6511, 1985
A:Title: Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and
A:Reference number: A01386; MUID:86016731
A:Accession: A01386
A:Molecule type: protein
A:Residues: 12-157 <ESC>
A:Experimental source: pituitary gland
R:Baird, A.; Esch, F.; Bohnen, P.; Ling, N.; Gospodarowicz, D.
Regul. Pept. 12, 201-213, 1985
A:Title: Isolation and partial characterization of an endothelial cell growth factor fro
A:Reference number: A60316; MUID:86095426
A:Accession: A60316
A:Molecule type: protein
A:Residues: 27-35, 'X', 37-43 <BAI>
A:Experimental source: kidney
R:Bohlen, P.; Baird, A.; Esch, F.; Ling, N.; Gospodarowicz, D.
Proc. Natl. Acad. Sci. U.S.A. 81, 5364-5368, 1984
A:Title: Isolation and partial molecular characterization of pituitary fibroblast growth
A:Reference number: A22054; MUID:84298139
A:Accession: A22054
A:Molecule type: protein
A:Residues: 12-26 <BOH>
A:Comment: The acidic and basic fibroblast growth factors are the major endothelial-cell
cell types in vitro (although bFGF is 30-100 times more potent than aFGF in stimulating t
C:Comment: This protein binds heparin more strongly than aFGF.
C:Superfamily: fibroblast growth factor
C:Keywords: alternative splicing; angiogenesis; blocked amino end; growth factor; hepari
F:1-157/Product: basic fibroblast growth factor, uterine form #status predicted <MAT1>
F:14-157/Product: basic fibroblast growth factor, pituitary gamma form #status experiment
F:12-157/Product: basic fibroblast growth factor, pituitary alpha form #status experiment
F:16-157/Product: basic fibroblast growth factor, pituitary short form #status predicted
F:23-157/Product: basic fibroblast growth factor, hepatic form #status experimental <MAT
F:27-157/Product: basic fibroblast growth factor, renal form #status experimental <MAT6>
F:29-33, 118-121/Region: heparin binding #status predicted
F:4/Modified site: blocked amino end (Ala) (in mature form pituitary gamma) (probably ac

Query Match 100.0%; Score 828; DB 1; Length 157;
Best Local Similarity 100.0%; Pred. No. 8, 66-75;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSTTTPALPEDGSGAAPPFGHFKDKRLKCKNGGFFLRHHPGRDVGREKSDPHI 60
DB 3 MAAGSTTTPALPEDGSGAAPPFGHFKDKRLKCKNGGFFLRHHPGRDVGREKSDPHI 62
QY 61 KIOLOAEENGVSIVKGVANRYLAMKEDRLASKCVTECEPFEELNESNNYTSRRY 120
DB 63 KIOLOAEENGVSIVKGVANRYLAMKEDRLASKCVTECEPFEELNESNNYTSRRY 122
QY 121 SSMYVALKRTGQYKLGPKTGPQKATILFLPMASAKS 155
DB 123 SSMYVALKRTGQYKLGPKTGPQKATILFLPMASAKS 157

RESULT 2
A:Title: Amino-terminal sequence of a large form of basic fibroblast growth factor is

A:23398
basic fibroblast growth factor precursor, 22.5K form - human
N:Alternate names: bFGF; fibroblast growth factor 2; prostatic growth factor; prostat
N:Contents: basic fibroblast growth factor, 18K form
C:Species: Homo sapiens (man)
C:Date: 31-Jul-1988 #sequence_revision 31-Dec-1993 #text_change 21-Jul-2000
C:Accession: A32398; A61537; A26642; B32878; S00297; A54316; B54316; A33624; A25824;
R:Prats, H.; Kaghad, M.; Prats, A.C.; Klagsbrun, M.; Lelias, J.M.; Liauzun, P.; Chalo
Proc. Natl. Acad. Sci. U.S.A. 86, 1836-1840, 1989
A:Title: High molecular mass forms of basic fibroblast growth factor are initiated by
A:Reference number: A32398; MUID:89184522
A:Accession: A32398
A:Molecule type: mRNA
A:Residues: 1-210 <PRA>
A:Cross-references: GB:J04513; NID:9183083; PID:AA52531.1; PID:9459811
R:Shibata, F.; Baird, A.; Florjanczyk, R.Z.
Growth Factors 4, 277-287, 1991
A:Title: Functional characterization of the human basic fibroblast growth factor gene
A:Reference number: A61537; MUID:92110035
A:Accession: A61537
A:Molecule type: DNA
A:Residues: 1-114 <SHI>
A:Note: authors translated the codon GGA for residue 47 as Ala
R:Kurokawa, T.; Sasada, R.; Iwane, M.; Igatahshi, K.
FEBS Lett. 213, 189-194, 1987
A:Title: Cloning and expression of cDNA encoding human basic fibroblast growth factor
A:Reference number: A26642; MUID:87162468
A:Accession: A26642
A:Molecule type: mRNA
A:Residues: 56-210 <KUR>
A:Cross-references: GB:M27968; NID:9182562; PID:AA52448.1; PID:9182563
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Merzila, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organizat
A:Reference number: A90924; MUID:87217066
A:Accession: B32878
A:Molecule type: mRNA
A:Residues: 56-210 <ABR>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Merzila, A.; Friedman, J.; Gospodarowicz, D.
EMBO J. 5, 2523-2528, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence and genomic organi
A:Reference number: S00297; MUID:87053817
A:Accession: S00297
A:Molecule type: DNA
A:Residues: 1-155 <AB2>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Shimoyama, Y.; Gotoh, M.; Ino, Y.; Sakamoto, M.; Kato, K.; Hirohashi, S.
Jpn. J. Cancer Res. 82, 1263-1270, 1991
A:Title: Characterization of high-molecular-mass forms of basic fibroblast growth fac
r:angiogenesis.
A:Reference number: A54316; MUID:92091228
A:Accession: A54316
A:Molecule type: protein
A:Residues: 'XX', 86-88, 'X', 90-91, 'X', 93-95 <SH3>
A:Experimental source: C-121 hepatocellular carcinoma cell line
A:Note: sequence extracted from NCBI backbone (NCBIP:71595)
A:Accession: B54316
A:Molecule type: protein
A:Residues: 'XX', 19, 'X', 21-29 <SH2>
A:Note: sequence extracted from NCBI backbone (NCBIP:71594)
R:Feige, J.J.; Bradley, J.D.; Fryburg, K.; Farris, J.; Cousens, L.C.; Barr, P.J.; Bai
J. Cell Biol. 109, 3105-3114, 1989
A:Title: Differential effects of heparin, fibronectin, and laminin on the phosphoryla
A:Reference number: A33624; MUID:90078343
A:Accession: A33624
A:Status: preliminary
A:Molecule type: protein
A:Residues: 57-210 <FEI>
R:Story, M.T.; Esch, F.; Shimasaki, S.; Sasase, J.; Jacobs, S.C.; Lawson, R.K.
Biochem. Biophys. Res. Commun. 142, 702-709, 1987
A:Title: Amino-terminal sequence of a large form of basic fibroblast growth factor is

A:Reference number: A25824; MUID:87156686
A:Accession: A25824
A:Molecule type: protein
A:Residues: 57-77 <STO>
A:Experimental source: prostate
R:Glimenez-Galligo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 135, 541-548, 1986
A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino terminal
A:Reference number: A90122; MUID:86186784
A:Accession: B24243
A:Molecule type: protein
A:Residues: 65-102, 'X', 104-105 <GIM>
A:Experimental source: brain
R:Gautschi, P.; Frater-Schroder, M.; Bollen, P.
FEBS Lett. 204, 203-207, 1986
A:Title: Partial molecular characterization of endothelial cell mitogens from human brain
A:Reference number: A91364; MUID:86275260
A:Accession: B24301
A:Molecule type: protein
A:Residues: 65-88, 'X', 90-98, 'X', 100 <GAN>
R:Sommer, A.; Brewer, M.T.; Thompson, R.C.; Moscatelli, D.; Presta, M.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 144, 543-550, 1987
A:Title: A form of human basic fibroblast growth factor with an extended amino terminus.
A:Reference number: S42242; MUID:8713238
A:Accession: S42242
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 54-210 <SOM>
A:Cross-references: EMBL:M17599; NID:q183086; PIDN:AAA52534.1; PID:q183087
R:Pantoliano, M.W.; Horlick, R.A.; Springer, B.A.; Van Dyk, D.E.; Tobey, T.; Wetmore, D.
Biochemistry 33, 10229-10248, 1994
A:Title: Multivalent ligand-receptor binding interactions in the fibroblast growth factor
A:Reference number: A55784; MUID:94347757
A:Accession: B55784
A:Molecule type: protein
A:Residues: 54-71 <PAN>
R:Watson, R.; Anthony, F.; Pickett, M.; Lambden, P.; Masson, G.M.; Thomas, E.J.
Biochem. Biophys. Res. Commun. 187, 1227-1231, 1992
A:Title: Reverse transcription with nested polymerase chain reaction shows expression of
clients.
A:Reference number: I52267; MUID:93038590
A:Accession: I52267
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 95-182 <RES>
A:Cross-references: GB:S47380; NID:q256535; PIDN:AA013853.1; PID:g4261553
R:Patry, V.; Buglier, B.; Amalric, F.; Prome, J.C.; Prats, H.
FEBS Lett. 349, 23-28, 1994
A:Title: Purification and characterization of the 210-amino acid recombinant basic fibro
A:Reference number: S46253; MUID:94320639
A:Accession: S46253
A:Molecule type: protein
A:Residues: 39-53, 65-88 <PAT>
A:Note: recombinant gene expressed in Escherichia coli
C:Genetics:
A:Gene: GDB:FGF2; FGF2
A:Cross-references: GDB:119910; OMIM:134920
A:Map position: 4q25-4q27
A:Start codon: CAG
C:Superfamily: fibroblast growth factor
C:Keywords: alternative initiators; angiogenesis; growth factor; heparin binding; mitoge
F:1-210/Product: basic fibroblast growth factor, 22-5K form #status predicted <MA2>
F:65-210/Product: basic fibroblast growth factor, 18K form #status predicted <MAT>
F:82-86/Region: heparin binding #status predicted
F:171-174/Region: heparin binding #status predicted

Query Match 98.7%; Score 817; DB 2; Length 210;
Best Local Similarity 98.7%; Pred. NO. 1.5e-73;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGGGAFPPGHPKDPKRLYCKNGGFLLRHPDGRVDGVRKSDPHI 60

|||||
Db 56 MAAGSITTLPALPEDGGGAFPPGHPKDPKRLYCKNGGFLLRHPDGRVDGVRKSDPHI 115
QY 61 KQLOAEERGVSVIKVCANRYLAMKEDGRLASCVTDECFEFLSNNTYRSRY 120
|||||
Db 116 KQLOAEERGVSVIKVCANRYLAMKEDGRLASCVTDECFEFLSNNTYRSRY 175
QY 121 SSWYVALKRTGGYKLGKTPGOKATLFLPMSAKS 155
|||||
Db 176 TSWYVALKRTGGYKLGSKTGPQKALFLPMSAKS 210

RESULT 3

A31674.
basic fibroblast growth factor precursor - rat

N:Alternate names: bFGF

C:Species: Rattus norvegicus (Norway rat)
C:Date: 21-May-1990 #sequence_revision 21-May-1990 #text_change 16-Jul-1999

C:Accession: A31674; S00876; S24309
R:Shimasaki, S.; Emoto, N.; Koba, A.; Mercado, M.; Shibata, F.; Cooksey, K.; Baird, A.

Biochem. Biophys. Res. Commun. 157, 256-263, 1988
A:Title: Complementary DNA cloning and sequencing of rat ovarian basic fibroblast gro

A:Reference number: A31674; MUID:89061721
A:Accession: A31674
A:Molecule type: mRNA

A:Residues: 1-154 <SHI>
A:Cross-references: GB:M22427; NID:q204285; PIDN:AAA41210.1; PID:q204286

R:Kurokawa, T.; Sano, M.; Igataashi, K.
Nucleic Acids Res. 16, 5201, 1988

A:Title: Nucleotide sequence of rat basic fibroblast growth factor cDNA.
A:Reference number: S00876; MUID:88262516

A:Accession: S00876
A:Molecule type: mRNA

A:Residues: 1-154 <KUR>
A:Cross-references: EMBL:X07285; NID:q56203; PIDN:CAA30265.1; PID:q56204

R:El-Husseini, A.E.D.; Peterson, J.A.; Myal, Y.; Shiu, R.P.C.
Biochem. Biophys. Res. Commun. 131, 314-316, 1992

A:Title: PCR detection of the rat brain basic fibroblast growth factor (bFGF) mRNA co

A:Reference number: S24309; MUID:92329546
A:Accession: S24309
A:Status: preliminary; translation not shown

A:Molecule type: mRNA
A:Residues: 35-154 <ELH>

A:Cross-references: EMBL:X61697; NID:q56143; PIDN:CAA43863.1; PID:g56144
C:Superfamily: fibroblast growth factor

C:Keywords: growth factor
F:1-9/Domain: signal sequence #status predicted <SIG>

F:10-154/Product: basic fibroblast growth factor #status predicted <MAT>

Query Match 96.2%; Score 796.5; DB 2; Length 154;
Best Local Similarity 96.8%; Pred. NO. 1.1e-71;
Matches 150; Conservative 3; Mismatches 1; Indels 1; Gaps 1;

QY 1 MAAGSITTLPALPEDGGGAFPPGHPKDPKRLYCKNGGFLLRHPDGRVDGVRKSDPHI 60

Db 1 MAAGSITSLPALPEDGG -GAFPPGHPKDPKRLYCKNGGFLLRHPDGRVDGVRKSDPHV 59

QY 61 KQLOAEERGVSVIKVCANRYLAMKEDGRLASCVTDECFEFLSNNTYRSRY 120

Db 60 KQLOAEERGVSVIKVCANRYLAMKEDGRLASCVTDECFEFLSNNTYRSRY 119

QY 121 SSWYVALKRTGGYKLGKTPGOKATLFLPMSAKS 155

Db 120 SSWYVALKRTGGYKLGSKTGPQKALFLPMSAKS 154

RESULT 4

C37360
basic fibroblast growth factor - mouse

C:Species: Mus musculus (house mouse)
C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999

C:Accession: C37360

R:Hebert, J.M.; Basilio, C.; Goldfarb, M.; Haub, O.; Martin, G.R.
Dev. Biol. 138, 454-463, 1990

A:Title: Isolation of cDNAs encoding four mouse FGF family members and characterization

A:Reference number: A37360; MUID:90201563

A:Accession: C37360

A:Status: preliminary

A:Molecule type: mRNA

A:Residues: 1-154 <HEB>

A:Cross-references: GB:M30644; NID:9193296; PID:AAA37621.1; PID:9309239

C:Superfamily: fibroblast growth factor

Query Match 94.4%; Score 781.5; DB 2; Length 154;
Best Local Similarity 94.8%; Pred. No. 3,4e-70;

Matches 147; Conservative 4; Mismatches 3; Indels 1; Gaps 1;

QY 1 MAAGSITTLPALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPH 60
Db 1 MAAGSITTLPALPEDDGA-APPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHV 59

QY 61 KLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRK 120
Db 60 KLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRK 119

QY 121 SSMYVALKRTGOYKLGPTGPGOKAILFLPMSAKS 155
Db 120 SSMYVALKRTGOYKLGSKTGPQOKAILFLPMSAKS 154

RESULT 5
S00185
basic fibroblast growth factor - sheep
N:Alternate names: prostatorin
C:Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)

C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999

C:Accession: S00185

R:Stimpson, R.J.; Moritz, R.L.; Lloyd, C.J.; Fabri, L.J.; Nice, E.C.; Rubira, M.R.; Burge

FEBS Lett. 224, 128-132, 1987

A:Title: Primary structure of ovine pituitary basic fibroblast growth factor.

A:Reference number: S00185; MUID:88055577

A:Accession: S00185

A:Molecule type: protein

A:Residues: 1-146 <SIM>

C:Superfamily: fibroblast growth factor

C:Keywords: growth factor; heparin binding; mitogen

F:18-22/Region: heparin binding #status predicted

F:107-110/Region: heparin binding #status predicted

Query Match 94.3%; Score 781; DB 1; Length 146;
Best Local Similarity 99.3%; Pred. No. 3,6e-70;

Matches 145; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 10 PALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHIKLOLAEE 69
Db 1 PALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHIKLOLAEE 60

QY 70 GVVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKSSMYVALK 129
Db 61 GVVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKSSMYVALK 120

QY 130 TGOYKLGPTGPGOKAILFLPMSAKS 155
Db 121 TGOYKLGPTGPGOKAILFLPMSAKS 146

RESULT 6
A48834

basic fibroblast growth factor - chicken

C:Species: Gallus gallus (chicken)

C:Date: 01-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 16-Jul-1999

C:Accession: A48834; S23636

R:Bojia, A.Z.; Meijers, C.; Zeller, R.

Dev. Biol. 157, 110-118, 1993

A:Title: Expression of alternatively spliced bFGF first coding exons and antisense mR

A:Reference number: A48834; MUID:93246053

A:Accession: A48834

A:Status: preliminary

A:Molecule type: nucleic acid

A:Residues: 1-189 <BOR>

A:Experimental source: embryo

A:Note: Sequence extracted from NCBI backbone (NCBIN:131000, NCBI:131001)

R:Mitrani, E.; Gruenbaum, Y.; Shohat, H.; Ziv, T.

Development 109, 387-393, 1990

A:Title: Fibroblast growth factor during mesoderm induction in the early chick embryo

A:Reference number: S23636; MUID:90382254

A:Accession: S23636

A:Status: preliminary

A:Molecule type: DNA

A:Residues: 95-128 <MIT>

A:Cross-references: EMBL:X56804; NID:962855; PID:CAA40139.1; PID:962856

C:Superfamily: fibroblast growth factor

Query Match 93.0%; Score 770; DB 2; Length 189;
Best Local Similarity 93.5%; Pred. No. 6e-69;
Matches 144; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

QY 2 AAGSITTLPALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHIK 61
Db 36 AAGSITTLPALPDGGGGA-APPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHIK 95

QY 62 LLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRK 121
Db 96 LLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRK 155

QY 122 SSMYVALKRTGOYKLGPTGPGOKAILFLPMSAKS 155
Db 156 SSMYVALKRTGOYKLGPTGPGOKAILFLPMSAKS 189

RESULT 7
S31622
basic fibroblast growth factor - short-tailed opossum (Monodelphis domestica) (fragme

C:Species: Monodelphis domestica

C:Date: 20-Feb-1995 #sequence_revision 20-Feb-1995 #text_change 12-Apr-1995

C:Accession: S31622

R:Kusewilt, D.F.; Sabourin, C.L.K.; Budge, C.L.; Ley, R.D.

submitted to the EMBL Data Library, September 1992

A:Description: Characterization of cDNA encoding basic fibroblast growth factor of th

A:Reference number: S31622

A:Accession: S31622

A:Status: preliminary

A:Molecule type: DNA

A:Residues: 1-164 <KUS>

A:Cross-references: EMBL:Z15154

C:Superfamily: fibroblast growth factor

Query Match 91.6%; Score 758.5; DB 2; Length 164;
Best Local Similarity 92.9%; Pred. No. 7e-68;
Matches 145; Conservative 4; Mismatches 6; Indels 1; Gaps 1;

QY 1 MAAGSITTLPALPED-GSGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPH 59
Db 9 MAAGSITTLPALSGDGGGGA-APPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPH 68

QY 60 IKLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRK 119
Db 69 IKLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRK 128

QY 120 YSMYVALKRTGOYKLGPTGPGOKAILFLPMSAKS 155
Db 129 YSMYVALKRTGOYKLGSKTGPQOKAILFLPMSAKS 164

RESULT 8
146711
fibroblast growth factor - rabbit (fragment)
C:Species: Oryctolagus cuniculus (domestic rabbit)
C:Date: 14-Feb-1997 #sequence_revision 14-Feb-1997 #text_change 16-Jul-1999
C:Accession: 146711
R:Winkles, J.A.; Friesel, R.; Alberts, G.F.; Janat, M.F.; Liau, G.
Am. J. Pathol. 143, 518-527, 1993
A:Title: Elevated expression of basic fibroblast growth factor in an immortalized rabbit
A:Reference number: 146711; MUID:93343209
A:Accession: 146711
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 1-137 <MIN>
A:Cross-references: GB:L12034; NID:g165014; PIDN:AAA31248.1; PID:g165015
C:Superfamily: fibroblast growth factor

Query Match 88.9%; Score 736; DB 2; Length 137;
Best Local Similarity 99.3%; Pred. No. 9.8e-66;
Matches 136; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 10 PALPDDGSGAPPPGPHFKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHITLQDAEER 69
|||||
DB 1 PALPDDGSGAPPPGPHFKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHITLQDAEER 60
OY 70 GVVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYALKR 129
|||||
DB 61 GVVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYALKR 120
OY 130 TGQYKLGPKTGPGOKAI 146
|||||
DB 121 TGQYKLGPKTGPGOKAI 137

RESULT 9
A40117
basic fibroblast growth factor - African clawed frog
C:Species: Xenopus laevis (African clawed frog)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A40117; A29618
R:Kneuman, D.; Abraham, J.A.; Haaparanta, T.; Palisi, T.M.; Kirschner, M.W.
Science 242, 1053-1056, 1988
A:Title: The presence of fibroblast growth factor in the frog egg: its role as a natural
A:Reference number: A40117; MUID:89058621
A:Accession: A40117
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <KIN>
A:Cross-references: GB:M18067; NID:g2141177; PIDN:AAA49726.1; PID:g2141178; GB:M21092
R:Kneuman, D.; Kirschner, M.
Cell 51, 869-877, 1987
A:Title: Synergistic induction of mesoderm by FGF and TGF-beta and the identification of
A:Reference number: A29618; MUID:88052890
A:Accession: A29618
A:Molecule type: mRNA
A:Residues: 95-110,112-155 <KI2>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor

Query Match 82.7%; Score 685; DB 1; Length 155;
Best Local Similarity 83.9%; Pred. No. 1.3e-60;
Matches 130; Conservative 8; Mismatches 17; Indels 0; Gaps 0;

OY 1 MAAGSITTLPALPDDGSGAPPPGPHFKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 60
|||||
DB 1 MAAGSITTLPALPDDGSGAPPPGPHFKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 60
OY 61 KIQLQAEERGVSIGKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120
|||||
DB 61 KIQLQAEERGVSIGKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120

OY 121 SSMYVALKRTGQYKLGPKTGPGOKAIFLPMsAKS 155
|||||
DB 121 SSMYVALKRTGQYKLGPKTGPGOKAIFLPMsAKS 155

RESULT 10
A32484
basic fibroblast growth factor precursor, 25K - guinea pig (fragments)
C:Species: Cavia porcellus (guinea pig)
C:Date: 20-Oct-1989 #sequence_revision 20-Oct-1989 #text_change 15-Jun-1996
C:Accession: A32484
R:Sommer, A.; Moscattelli, D.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 160, 1267-1274, 1989
A:Title: An amino-terminally extended and post-translationally modified form of a 25K
A:Reference number: A32484; MUID:89273588
A:Accession: A32484
A:Status: preliminary; nucleic acid sequence not shown; not compared with conceptual
A:Molecule type: mRNA
A:Residues: 1-125 <SOM>
C:Superfamily: fibroblast growth factor

Query Match 56.3%; Score 466.5; DB 2; Length 125;
Best Local Similarity 63.2%; Pred. No. 4.7e-39;
Matches 98; Conservative 1; Mismatches 5; Indels 51; Gaps 3;

OY 1 MAAGSITTLPALPDDGSGAPPPGPHFKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 60
|||||
DB 22 MAAGSITTLPALPDDGSGAPPPGPHFKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 57
OY 61 KIQLQAEERGVSIGKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120
|||||
DB 58 -LQDAEDR-----CVTDECFEERLESNNYNTYRSRY 90
OY 121 SSMYVALKRTGQYKLGPKTGPGOKAIFLPMsAKS 155
|||||
DB 91 SSMYVALKRTGQYKLGPKTGPGOKAIFLPMsAKS 125

RESULT 11
A60721
acidic fibroblast growth factor - golden hamster
N:Alternate names: heparin-binding growth factor 1
C:Species: Mesocricetus auratus (golden hamster)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A60721
R:Hall, J.A.; Harris, M.A.; Malark, M.; Mansson, P.E.; Zhou, H.; Harris, S.E.
J. Cell. Biochem. 43, 17-26, 1990
A:Title: Characterization of the hamster DDT-1 cell afGF/HGBF-1 gene and cDNA and its
A:Reference number: A60721; MUID:90270291
A:Accession: A60721
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <HAL>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding

Query Match 51.6%; Score 427.5; DB 1; Length 155;
Best Local Similarity 55.4%; Pred. No. 4.4e-35;
Matches 87; Conservative 17; Mismatches 48; Indels 5; Gaps 2;

OY 1 MAAGSITTLPALPDDGSGAPPPGPHFKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 60
|||||
DB 1 MAAGSITTLPALPDDGSGAPPPGPHFKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 57
OY 61 KIQLQAEERGVSIGKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120
|||||
DB 58 OLQLSAESAGEVYIKGTETGYLADMTDGLYGSQYPNECLFLELBNHNNTYRSKH 117
OY 121 S---SWYVALKRTGQYKLGPKTGPGOKAIFLPMsAKS 155
|||||
DB 118 AEKNMFVGLKNGSGCRKRPRTHYGOKAIFLPLPVS 154

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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:42 ; Search time 23.13 seconds
(without alignments)
259.470 Million cell updates/sec

Title: US-09-802-365-6
Perfect score: 828
Sequence: 1 MAAGSITTLPALPEDGSGA.....GPKTGPQKAILFLPMSAKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues
Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0
Maximum DB seq length: 2000000000
Post-processing: Minimum Match 0%
Maximum Match 10%
Listing first 45 summaries

Database : SwissProt_40.*
Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	828	100.0	155	1	FGF2_BOVIN
2	822	99.3	155	1	FGF2_SHEEP
3	817	98.7	155	1	FGF2_HUMAN
4	796.5	96.2	154	1	FGF2_FAT
5	781.5	94.4	154	1	FGF2_MOUSE
6	770	93.0	158	1	FGF2_CHICK
7	758.5	91.6	156	1	FGF2_MONDO
8	736	88.9	137	1	FGF2_RABIT
9	685	82.7	155	1	FGF2_XENLA
10	427.5	51.6	155	1	FGF1_MESAU
11	419.5	50.7	155	1	FGF1_CHICK
12	418.5	50.5	155	1	FGF1_HUMAN
13	413.5	49.9	155	1	FGF1_MOUSE
14	412.5	49.8	152	1	FGF1_PIG
15	402.5	48.6	155	1	FGF1_BOVIN
16	262	31.6	194	1	FGF4_CHICK
17	252.5	30.5	206	1	FGF4_HUMAN
18	252	30.4	256	1	FGF3_HRARE
19	250.5	30.3	264	1	FGF5_MOUSE
20	250.5	30.3	266	1	FGF5_MOUSE
21	249	30.1	220	1	FGF3_CHICK
22	245.5	29.6	206	1	FGF4_BOVIN
23	245	29.6	208	1	FGF6_HUMAN
24	245	29.6	208	1	FGF6_MOUSE
25	242	29.2	268	1	FGF5_HUMAN
26	238.5	28.8	202	1	FGF4_MOUSE
27	236	28.5	187	1	FGF4_XENLA
28	235.5	28.4	237	1	FGF3_XENLA
29	235	28.4	245	1	FGF3_MOUSE
30	234	28.3	239	1	FGF3_HUMAN
31	231.5	28.0	192	1	FGF8_XENLA
32	216	26.1	208	1	FGF9_HUMAN
33	216	26.1	208	1	FGF9_MOUSE

34	216	26.1	208	1	FGF9_RAT	P36364 rattus norv
35	212	25.6	209	1	FGF9_XENLA	Q91875 xenopus lae
36	209	25.2	211	1	FGF8_HUMAN	O9np95 homo sapien
37	206.5	24.9	207	1	FGF8_RAT	O54769 rattus norv
38	205.5	24.8	194	1	FGF7_CANFA	P79150 canis fam11
39	205.5	24.8	207	1	FGF8_HUMAN	O43320 homo sapien
40	204.5	24.7	194	1	FGF7_MOUSE	P36363 mus musculu
41	203	24.5	208	1	FGF4_HUMAN	O15520 homo sapien
42	203	24.5	215	1	FGF4_RAT	P70492 rattus norv
43	202.5	24.5	194	1	FGF7_HUMAN	P21781 homo sapien
44	202.5	24.5	194	1	FGF7_SHEEP	P48808 ov1s aries
45	200	24.2	209	1	FGF4_MOUSE	O35565 mus musculu

ALIGNMENTS

RESULT 1
ID FGF2_BOVIN STANDARD: PRT: 155 AA.
AC P03969:
DT 23-OCT-1986 (Rel. 02, Created)
DT 23-OCT-1986 (Rel. 02, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin) [Contains: Kidney-derived growth
DE factor].
GN FGF2 OR FGF-2.
OS Bos taurus (Bovine).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Bovinae; Bos.
OX NCBI_TaxID=9913;
RN [1]
RP SEQUENCE FROM N.A.
RA MEDLINE=86261806; PubMed=2425435;
RA Abraham J.A., Whang J.L., Tumolo A., Friedman J.,
RA Hjerrild K.A., Gospodarowicz D., Fiddes J.C.;
RT "Nucleotide sequence of a bovine clone encoding the angiogenic
RT protein, basic fibroblast growth factor.";
RL Science 233:545-548(1986).
RN [2]
RP SEQUENCE FROM N.A.
RA MEDLINE=87217066; PubMed=3472745;
RA Abraham J.A., Whang J.L., Tumolo A., Fiddes J.C.;
RT "Human basic fibroblast growth factor: nucleotide sequence, genomic
RT organization, and expression in mammalian cells.";
RL Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).
RN [3]
RP SEQUENCE OF 10-155.
RA MEDLINE=86016731; PubMed=3863109;
RA Esch F., Baird A., Ling N., Ueno N., Hill F., Denoroy L., Klepper R.,
RA Gospodarowicz D., Boehlen P., Guillemin R.;
RT "Primary structure of bovine pituitary basic fibroblast growth factor
RT (FGF) and comparison with the amino-terminal sequence of bovine brain
RT acidic FGF.";
RL Proc. Natl. Acad. Sci. U.S.A. 82:6507-6511(1985).
RN [4]
RP SEQUENCE OF 1-9.
RA MEDLINE=86295737; PubMed=3741423;
RA Ueno N., Baird A., Esch F., Ling N., Guillemin R.;
RT "Isolation of an amino terminal extended form of basic fibroblast
RT growth factor.";
RL Biochem. Biophys. Res. Commun. 130:580-588(1986).
RN [5]
RP SEQUENCE OF 25-41.
RA TISSUE=Kidney;
RC MEDLINE=86095426; PubMed=4081126;
RA Baird A., Esch F., Boehlen P., Ling N., Gospodarowicz D.;
RT "Isolation and partial characterization of an endothelial cell growth
RT factor from the bovine kidney: homology with basic fibroblast growth
RT factor.";
RL Regul. Pept. 12:201-213(1985).

[6]
 RN SEQUENCE OF 21-40.
 RP TISSUE-Kidney;
 RC MEDLINE=87119165; PubMed=3809608;
 RA Ueno N., Baird A., Esch F., Shimazaki S., Ling N., Guillemin R.;
 RT "Purification and partial characterization of a mitogenic factor from
 RT bovine liver: structural homology with basic fibroblast growth
 RT factor.";
 RL Regul. Pept. 16:135-145(1986).
 RN [7]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RA MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiyama H., Chitrino A., Faham S., Fox G.M., Arakawa T.,
 RA Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth
 RT factors.";
 RL Science 251:90-93(1991).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 DR EMBL: M13440; AAA30518.1; -
 DR PIR: A24663; GKBOB.
 DR PIR: A24819; A24819.
 DR PIR: A32878; A32878.
 DR PDB: 1BAS; 31-OCT-93.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; ILL_HBGF.
 DR Pfam: PF00167; FGF_1.
 DR PRINTS: PR00262; ILLHBGF.
 DR PRODOM: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 25 155 KIDNEY-DERIVED GROWTH FACTOR.
 FT SITE 46 48 CELL ATTACHMENT SITE (POTENTIAL).
 FT SITE 88 90 CELL ATTACHMENT SITE (POTENTIAL).
 FT BINDING 27 31 HEPARIN (POTENTIAL).
 FT BINDING 116 119 HEPARIN (POTENTIAL).
 FT STRAND 30 34
 FT TURN 35 38
 FT STRAND 39 43
 FT STRAND 45 46
 FT TURN 49 52
 FT STRAND 55 56
 FT TURN 58 60
 FT HELIX 62 68
 FT STRAND 69 70
 FT TURN 71 76
 FT STRAND 77 80
 FT TURN 81 85
 FT STRAND 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 FT STRAND 113 117

FT TURN 121 122
 FT STRAND 124 124
 FT STRAND 127 127
 FT TURN 129 130
 FT STRAND 133 133
 FT HELIX 136 138
 FT TURN 141 142
 FT HELIX 144 146
 FT STRAND 148 151
 SO SEQUENCE 155 AA; 17250 MW; BE6CE70FA6107129 CRC64;
 Query Match 100.0%; Score 828; DB 1; Length 155;
 Best Local Similarity 100.0%; Pred. No. 6, 1e-79;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 MAAGSTITLPALEPDGSGAPPGHFKDKRLRYCKNGGFLRHPPGRVGYREKSDPHI 60
 DB 1 MAAGSTITLPALEPDGSGAPPGHFKDKRLRYCKNGGFLRHPPGRVGYREKSDPHI 60
 QY 61 KIQLQAEERGVVSINKVCANRYLAMKEDGRLLASKCVTECEFFERLESNNVTYSRKY 120
 DB 61 KIQLQAEERGVVSINKVCANRYLAMKEDGRLLASKCVTECEFFERLESNNVTYSRKY 120
 QY 121 SSWYVALKRTGYKLGKPGOKAILFLPMSAKS 155
 DB 121 SSWYVALKRTGYKLGKPGOKAILFLPMSAKS 155
 RESULT 2
 FGF2_SHEEP STANDARD; PRT; 155 AA.
 ID FGF2_SHEEP
 AC P20003;
 DT 01-FEB-1991 (Rel. 17, Created)
 DT 01-FEB-1996 (Rel. 33, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
 DE growth factor) (BGF) (Prostatopin).
 GN FGF2 OR FGF-2.
 OS Ovis aries (Sheep).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
 OC Bovidae; Caprinae; Ovis.
 OX NCBI_TaxID=9940;
 RN RN
 RP SEQUENCE FROM N.A.
 RA Sutton R., Ward W.G., Raphael K.A., Cam G.R.;
 RL Submitted (SEP-1994) to the EMBL/Genbank/DBJ databases.
 RN (2)
 RP SEQUENCE OF 9-155.
 RX MEDLINE=88055577; PubMed=3678486;
 RA Simpson R.J., Moritz R.L., Lloyd C.J., Fabri L.J., Nice E.C.,
 RA Rubira M.R., Burgess A.W.;
 RT "Primary structure of ovine pituitary basic fibroblast growth
 RT factor.";
 RL FEBS Lett. 224:128-132(1987).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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RT factors.";
 RL Science 251:90-93(1991).
 RN [14]
 RP STRUCTURE BY NMR.
 RX MEDLINE=97040521; PubMed=8885834;
 RA Moy F.J., Seddon A.P., Boehlen P., Powers R.;
 RT "High-resolution solution structure of basic fibroblast growth factor
 determined by multidimensional heteronuclear magnetic resonance
 spectroscopy.";
 RL Biochemistry 35:13552-13561(1996).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC -----
 DR EMBL; M17599; AAA52534.1; ALT_INIT.
 DR EMBL; X04431; CAA28027.1; -
 DR EMBL; X04432; CAA28028.1; -
 DR EMBL; X04433; CAA28029.1; -
 DR EMBL; M27968; AAA52448.1; -
 DR EMBL; J04513; AAA52533.1; ALT_INIT.
 DR PIR; A25824; A25824.
 DR PIR; A26642; A26642.
 DR PIR; B24243; B24243.
 DR PIR; B24301; B24301.
 DR PIR; B32878; B32878.
 DR PIR; S00297; S00297.
 DR PDB; 2EGF; 15-APR-92.
 DR PDB; 4EGF; 15-JUL-93.
 DR PDB; 1FGA; 15-JUL-93.
 DR PDB; 1BFB; 03-APR-96.
 DR PDB; 1BFC; 03-APR-96.
 DR PDB; 1BFE; 16-JUN-97.
 DR PDB; 1BFG; 31-JAN-94.
 DR PDB; 2BFA; 30-APR-94.
 DR PDB; 1BLA; 08-NOV-96.
 DR PDB; 1BLD; 08-NOV-96.
 DR MIM; 134920; -
 DR InterPro; IPR002209; HBGF_FGF.
 DR InterPro; IPR002348; IL1_HBGF.
 DR Pfam; PF00167; FGF; 1.
 DR PRINTS; PRO0062; IL1HBGF.
 DR PRODOM; PD000831; HBGF_FGF; 1.
 DR SMART; SM00442; FGF; 1.
 DR PROSITE; PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 46 48
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT STRAND 35 38
 FT STRAND 39 43
 FT STRAND 45 46
 FT STRAND 49 52
 FT STRAND 55 56
 FT HELIX 58 60
 FT STRAND 62 66
 HEPARIN-BINDING GROWTH FACTOR 2.
 CELL ATTACHMENT SITE (POTENTIAL).
 HEPARIN (POTENTIAL).
 HEPARIN (POTENTIAL).

FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 FT STRAND 113 117
 FT TURN 121 122
 FT STRAND 124 124
 FT STRAND 127 127
 FT STRAND 129 130
 FT TURN 132 133
 FT STRAND 136 138
 FT HELIX 141 142
 FT TURN 141 142
 FT HELIX 144 146
 FT STRAND 148 152
 SO SEQUENCE 155 AA; 17254 MW; BE6CE1373007129 CRC64;
 Query Match 98.7%; Score 817; DB 1; Length 155;
 Best Local Similarity 98.7%; Pred. No. 8.4e-78;
 Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;
 QY 1 MAAGSITTLPALPEDGSGAPPPGHFKDKRLYCKNGGFELRHDPGRVGVREKSDPHI 60
 DB 1 MAAGSITTLPALPEDGSGAPPPGHFKDKRLYCKNGGFELRHDPGRVGVREKSDPHI 60
 QY 61 KIQLAEEGVGVSTKGVCANRYLAKMKEDGRLLASLCYVDECFEFLRESNNYNTRSRY 120
 DB 61 KIQLAEEGVGVSTKGVCANRYLAKMKEDGRLLASLCYVDECFEFLRESNNYNTRSRY 120
 QY 121 SSMYVALKRTGQYKLGPKTPGCKAIIPLPMSAKS 155
 DB 121 TSMYVALKRTGQYKLGSKTGPCKAIIPLPMSAKS 155
 RESULT 4
 FGF2_RAT
 ID FGF2_RAT STANDARD: PRT: 154 AA.
 AC P13109;
 DT 01-JAN-1990 (Rel. 13, Created)
 DT 01-JAN-1990 (Rel. 13, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
 DE growth factor) (BFGF) (Prostatropin).
 GN FGF2 OR FGF-2
 OS Rattus norvegicus (Rat).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
 OX NCBI_Taxid=10116;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC STRAIN-SPRAGUE-DAWLEY; TISSUE-Ovary;
 RX MEDLINE=89061721; PubMed=3196337;
 RA Shimazaki S., Emoto N., Koba A., Mercado M., Shibata F.,
 RA Cooksey K., Baird A., Ling N.;
 RT "Complementary DNA cloning and sequencing of rat ovarian basic
 RT fibroblast growth factor and tissue distribution study of its mRNA.";
 RL Biochem. Biophys. Res. Commun. 157:256-263(1988).
 [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE-Brain;
 RX MEDLINE=88262516; PubMed=3387229;
 RA Kurokawa T., Sano M., Igarashi K.;
 RT "Nucleotide sequence of rat basic fibroblast growth factor cDNA.";
 RL Nucleic Acids Res. 16:5201-5201(1988).
 [3]
 RP SEQUENCE OF 1-28 FROM N.A.
 RC STRAIN-SPRAGUE-DAWLEY; TISSUE-Testis;
 RX MEDLINE=97200905; PubMed=9048734;
 RA Pasumathil K.B.S., Jin Y., Cattini P.A.;

RT "Cloning of the rat fibroblast growth factor-2 promoter region and
its response to mitogenic stimuli in glioma C6 cells.";
RL J. Neurochem. 68:898-908(1997).
RN [4]
RP SEQUENCE OF 35-154 FROM N.A.
RC STRAIN-SPRAGUE-DAWLEY; TISSUE=Brain;
RX MEDLINE=92329546; Pubmed=1378302;
RA El-Husseini A.E.D., Paterson J.A., Myal Y., Shiu R.P.C.;
RT "PCR detection of the rat brain basic fibroblast growth factor (bFGF)
mRNA containing a unique 3' untranslated region.";
RL Biochim. Biophys. Acta 131:314-316(1992).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- TISSUE SPECIFICITY: FOUND IN ALL THE TISSUES EXAMINED.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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DR EMBL; M22427; AAA41210.1; -
DR EMBL; X07285; CAA30265.1; -
DR EMBL; U78079; AAC53225.1; -
DR EMBL; X61697; CAA43863.1; -
DR PIR; S00876; S00876.
DR PIR; A31674; A31674.
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; ILHBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF_1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KM Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17139 MW; 1A0F14FF423D8403 CRC64;

Query Match 96.2%; Score 796.5; DB 1; Length 154;
Best Local Similarity 96.8%; Pred. No. 1.e-75;
Matches 150; Conservative 3; Mismatches 1; Indels 1; Gaps 1;

QY 1 MAASITTLPALPEDGGGAPPPGHFKDKPKRLCYCKNGGFLLRIHPDGVADVGVREKSDPHI 60
DB 1 MAASITSLPALPEDGG-GAPPPGHFKDKPKRLCYCKNGGFLLRIHPDGVADVGVREKSDPHV 59

QY 61 KIQLOAERGVSVSTKGVCANRYLAMKEDGRLLASVCYDECFEFLRLSNNYNTYRSRKY 120
DB 60 KIQLOAERGVSVSTKGVCANRYLAMKEDGRLLASVCYDECFEFLRLSNNYNTYRSRKY 119

QY 121 SSWYVALKRTGQYKLGPTGPGQKAILFLPMSAKS 155
DB 120 SSWYVALKRTGQYKLGPTGPGQKAILFLPMSAKS 154

RESULT 5
FGF2_MOUSE STANDARD; PRT; 154 AA.
AC P15655;
DT 01-APR-1990 (Rel. 14, Created)

DT 01-APR-1990 (Rel. 14, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
growth factor) (bFGF) (Prostatopin).
GN FGF2 OR FGF-2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090.
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=90201563; Pubmed=231843;
RA Hebert J.M., Basilico C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [2]
RP SEQUENCE FROM N.A.
RC STRAIN=C57BL/6J, A/J, AND NOD/LtJ; TISSUE=Spleen;
RA Ma R.Z., Teuscher C.;
RL Submitted (MAY-1998) to the EMBL/GenBank/DBJ databases.
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.
CC -----
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL; M30644; AAA37621.1; -
DR EMBL; AF065903; AAC17503.1; -
DR EMBL; AF065904; AAC17504.1; -
DR EMBL; AF065905; AAC17505.1; -
DR PIR; C37360; C37360.
DR HSSP; P09038; 1BFF.
DR MGD; MGI:95516; Fgf2.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; ILHBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF_1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KM Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17153 MW; 689F677416274388 CRC64;

Query Match 94.4%; Score 781.5; DB 1; Length 154;
Best Local Similarity 94.8%; Pred. No. 4.e-74;
Matches 147; Conservative 4; Mismatches 3; Indels 1; Gaps 1;

QY 1 MAASITTLPALPEDGGGAPPPGHFKDKPKRLCYCKNGGFLLRIHPDGVADVGVREKSDPHI 60
DB 1 MAASITSLPALPEDGGA-APPPGHFKDKPKRLCYCKNGGFLLRIHPDGVADVGVREKSDPHV 59

QY 61 KIQLOAERGVSVSTKGVCANRYLAMKEDGRLLASVCYDECFEFLRLSNNYNTYRSRKY 120
DB 60 KIQLOAERGVSVSTKGVCANRYLAMKEDGRLLASVCYDECFEFLRLSNNYNTYRSRKY 119

QY 121 SSWYVALKRTGQYKLGPTGPGQKAILFLPMSAKS 155

DB 121 YSNMYVALKRTGQYKLGSKTGPQKAI LFT_PMSAKS 156

RESULT 8

FGF2_RABIT STANDARD: PRT: 137 AA.

AC P48799;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatin) (Fragment).
GN FGF2.
OS Oryctolagus cuniculus (Rabbit).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX NCBI_TaxID=9986;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN-NEW ZEALAND WHITE; TISSUE-Smooth muscle;
RX MEDLINE=93343209; PubMed=8342599;
RA Winkles J.A., Friesel R., Alberts G.F., Janat M.F., Liau G.;
RT "Elevated expression of basic fibroblast growth factor in an immortalized rabbit smooth muscle cell line."
RL Am. J. Pathol. 143:518-527(1993).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.

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CC EMBL: L12034; AAA31248.1; -
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF; 1.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT BINDING 18 22
FT BINDING 107 110 HEPARIN (POTENTIAL).
FT NON_TER 137 137 HEPARIN (POTENTIAL).
SQ SEQUENCE 137 AA: 15418 MW; 0D9EA457B88B8C51 CRC64;

Query Match 88.9%; Score 736; DB 1; Length 137;
Best Local Similarity 99.3%; Pred. No. 1.9e-69;
Matches 136; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 10 PALPEDGSGAPPGHFKDKRLCKNGGFLRIHPDGRVDGVRKSDPHIKLOLAER 69
DB 1 PALPEDGSGAPPGHFKDKRLCKNGGFLRIHPDGRVDGVRKSDPHIKLOLAER 60
QY 70 GYVSTKGCANRYLAMKEDGRLLASKCVTDECFFPERLESNNYNTYRSKYSWYALKR 129
DB 61 GYVSTKGCANRYLAMKEDGRLLASKCVTDECFFPERLESNNYNTYRSKYSWYALKR 120
QY 130 TGOYKLGKPTGPGOKAI 146
DB 121 TGOYKLGKPTGPGOKAI 137

RESULT 9

FGF2_XENLA STANDARD: PRT: 155 AA.

AC P12226;
DT 01-OCT-1989 (Rel. 12, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Amphibia; Batrachia; Anura; Mesobatrachia; Piploidea; Pipidae;
OC Xenopodidae; Xenopus.
OX NCBI_TaxID=8355;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89058621; PubMed=3194757;
RA Kimelman D., Abraham J., Haaparanta T., Palisi T., Kirschner M.;
RT "The presence of fibroblast growth factor in the frog egg: its role as a natural mesoderm inducer."
RL Science 242:1053-1056(1988).
RN [2]
RP SEQUENCE OF 95-155 FROM N.A.
RX MEDLINE=88052890; PubMed=3479265;
RA Kimelman D., Kirschner M.;
RT "Synergistic induction of mesoderm by FGF and TGF-beta and the identification of an mRNA coding for FGF in the early Xenopus embryo."
RL Cell 51:869-877(1987).

CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC EMBL: M18067; AAA49726.1; -
DR PIR: A29618; A29618.
DR PIR: A40117; A40117.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; ILI_HBGF.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
FT CONFLICT 111 111 MISSING (IN REF. 2).
SQ SEQUENCE 155 AA: 17241 MW; 036735C8063142FD CRC64;

Query Match 82.7%; Score 685; DB 1; Length 155;
Best Local Similarity 83.9%; Pred. No. 4.2e-64;
Matches 130; Conservative 8; Mismatches 17; Indels 0; Gaps 0;

QY 1 MAAGSTTLPALPEDGSGAPPGHFKDKRLCKNGGFLRIHPDGRVDGVRKSDPHI 60
DB 1 MAAGSTTLPTSESDGNNPFSKDKRLCKNGGFLRIHPDGRVDGVRKSDPHI 60
QY 61 KLOLAVERGVVSIKIGVTANRYLAMKEDGRLLASKCVTDECFFPERLESNNYNTYRSKY 120
DB 61 KLOLAVERGVVSIKIGVTANRYLAMKEDGRLLASKCVTDECFFPERLESNNYNTYRSKY 120

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OY 121 SSMYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 155
DB 121 SSMYVALKRTGQYKNGSSYTPGOKAILFLPMSAKS 155

RESULT 10
FGFL_MESAU
ID FGFL_MESAU STANDARD: PRT: 155 AA.
AC P34004;
DT 01-FEB-1994 (Rel. 28, Created)
DT 01-FEB-1994 (Rel. 28, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN FGFL OR FGF-1.
OS Mesocricetus auratus (Golden hamster).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
OC Mesocricetus.
OC NCBI_TaxID=10036;
OX [1]
RN SEQUENCE FROM N.A.
RP MEDLINE=90270291; PubMed=1693366;
RX Hall J.A., Harris M.A., Malark M., Mansson P.E., Zhou H., Harris S.E.;
RT "Characterization of the hamster DDT-1 cell afgf/HBGF-1 gene and cDNA
RT and its modulation by steroids."
RL J. Cell. Biochem. 43:17-26(1990).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES HBGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
DR PIR: A60721; A60721.
DR HSSP: P05230; 1BML.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IIL_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IILHBGF.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1
FT CHAIN 15
FT BINDING 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SO SEQUENCE 155 AA; 17403 MW; 41B5EC760E412C5 CRC64;

Query Match 51.6%; Score 427.5; DB 1; Length 155;
Best Local Similarity 55.4%; Pred. No. 2,2e-37;
Matches 87; Conservative 17; Mismatches 48; Indels 5; Gaps 2;

OY 1 MAAGSTITLPALEPDGSGAAPPFGHFKDPRKLYCKNGGFLRIHPDGRDVGREKSDPHI 60
DB 1 MAEGITTFSALETFRN--LPPGNVKKRKLKLLYCSNGHFRLIDPGYDGRDRDQHI 57
OY 61 KQLOAENGCVYSIKGVCANRYLAKMEKQRLASKCYVDECFEFLRLENNNTYRSKY 120
DB 58 QLOLSAESAGEVYIKGTETGYLMDTDLGLGSDPTNECEFLERLEBNHYNTYSKKH 117
OY 121 S--SWYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 155
DB 118 AEKNMFPVGLKNGSCKRGRPTHYGOKAILFLPLPVSS 154
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DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF) (Alpha-endothelial cell growth factor).
GN FGFL OR FGF-1.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RN SEQUENCE FROM N.A.
RP MEDLINE=91347925; PubMed=1715259;
RX Schnurch H., Risau W.;
RT "Differentiating and mature neurons express the acidic fibroblast
RT growth factor gene during chick neural development."
RL Development 111:1143-1154(1991).
RN [2]
RN SEQUENCE FROM N.A.
RP Martin G.R., Han J.K.;
RL Submitted (JUL-1995) to the EMBL/Genbank/DBJ databases.
RN [3]
RP SEQUENCE OF 22-48.
RX MEDLINE=88296438; PubMed=3402441;
RX Risau W., Gautschi-Sova P., Boehlen P.;
RT "Endothelial cell growth factors in embryonic and adult chick brain
RT are related to human acidic fibroblast growth factor."
RL EMBO J. 7:959-962(1988).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES HBGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@isb-sdb.ch).
CC -----
DR EMBL: S63263; AAB19629.1; -
DR EMBL: U31863; AAB80310.1; -
DR EMBL: S63261; AAD13942.1; -
DR PIR: S02639; S02639.
DR HSSP: P05230; 2AXM.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IIL_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IILHBGF.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT CHAIN 22 155 ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SO SEQUENCE 155 AA; 17322 MW; 8EDB70545E2B4365 CRC64;

Query Match 50.7%; Score 419.5; DB 1; Length 155;
Best Local Similarity 55.6%; Pred. No. 1.5e-36;
Matches 85; Conservative 21; Mismatches 42; Indels 5; Gaps 2;

OY 1 MAAGSTITLPALEPDGSGAAPPFGHFKDPRKLYCKNGGFLRIHPDGRDVGREKSDPHI 60
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DB      1  MAEGITTFALTERRFG---LPLGNVKKPKLLYCSNGGHFLRLDPDGKVGTRDSDOI 57
OY      61  KQLOAEERGVSISIGVCANRLAKNEKDRILASKCVTDECFEPRLSENNYTRSRKY 120
       :||| ||| ||| ||| :||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
DB      58  QLOLSAEDVGEYITKSTASGYTLADTNLGYSQLPGECLFLERLENNHNTYISKKH 117
OY      121  S--SWYVALKRTGYKYLGPRTGPGGKAILFLPM 151
       : ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
DB      118  ADKNMFVGLKKNNGSKLGPRTYHGOKAILFLPL 150

RESULT  12
FCF1_HUMAN
ID      FCF1_HUMAN
AC      P05230; P07502;
DC      13-AUG-1987 (Rel. 05, Created)
DT      13-AUG-1987 (Rel. 05, Last sequence update)
DT      01-MAR-2002 (Rel. 41, Last annotation update)
DE      Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE      growth factor) (AFGF) (Beta-endothelial cell growth factor) (ECGF-
DE      beta).
CN      FCF1 OR FGFA.
OS      Homo sapiens (Human).
OC      Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC      Mammalia; Eutheria; Primates; Catarrhini; Homidae; Homo.
OX      NCBI_TaxID=9606;
RN      [1]
RP      SEQUENCE FROM N.A.
RX      MEDLINE=86261805; PubMed=3523756;
RA      Jaye M., Howk R., Burgess W., Ricca G.A., Chiu I.-M., Ravera M.W.,
RA      O'Brien S.J., Modi W.S., Maciag T., Drohan W.N.;
RT      "Human endothelial cell growth factor: cloning, nucleotide sequence,
RT      and chromosome localization.";
RT      Science 233:541-545(1986).
RN      [2]
RP      SEQUENCE FROM N.A.
RC      TISSUE=Brain stem;
RX      MEDLINE=89343957; PubMed=2474753;
RA      Wang W.P., Lehtoma K., Varban M.L., Krishnan I., Chiu I.M.;
RT      "Cloning of the gene coding for human class I heparin-binding growth
RT      factor and its expression in fetal tissues.";
RT      Mol. Cell. Biol. 9:2387-2395(1989).
RN      [3]
RP      SEQUENCE FROM N.A.
RC      TISSUE=Brain stem;
RX      MEDLINE=90265618; PubMed=1693186;
RA      Chiu I.M., Wang W.P., Lehtoma K.;
RT      "Alternative splicing generates two forms of mRNA coding for human
RT      heparin-binding growth factor 1.";
RT      Oncogene 5:755-762(1990).
RN      [4]
RP      SEQUENCE FROM N.A.
RX      MEDLINE=90073637; PubMed=2590193;
RA      Meglia A., Tischler E., Graves D., Tumolo A., Miller J.,
RA      Gospodarowicz D., Abraham J.A., Shipley G.D., Fiddes J.C.;
RT      "Structural analysis of the gene for human acidic fibroblast growth
RT      factor.";
RT      Biochem. Biophys. Res. Commun. 164:1121-1129(1989).
RN      [5]
RP      SEQUENCE FROM N.A.
RX      MEDLINE=92019819; PubMed=1717925;
RA      Wang W.P., Quick D., Balcerzak S.P., Needleman S.W., Chiu I.M.;
RT      "Cloning and sequence analysis of the human acidic fibroblast growth
RT      factor gene and its preservation in leukemia patients.";
RT      Oncogene 6:1521-1529(1991).
RN      [6]
RP      SEQUENCE FROM N.A.
RX      MEDLINE=92202857; PubMed=1372643;
RA      Li Y.L., Kha H., Golden J.A., Migchelsen A.A.J., Goetzel E.J.,
RA      Turk E.J.;
RT      "An acidic fibroblast growth factor protein generated by alternate
RT      splicing acts like an antagonist.";
RT      J. Exp. Med. 175:1073-1080(1992).
RN      [7]
RP      SEQUENCE OF 1-154 FROM N.A.
RX      MEDLINE=94069734; PubMed=7504343;
RA      Zhao X.M., Yeoh T.K., Hiebert M., Frist W.H., Miller G.G.;
RT      "The expression of acidic fibroblast growth factor (heparin-binding
RT      growth factor-1) and cytokine genes in human cardiac allografts and T
RT      cells.";
RT      Transplantation 56:1177-1182(1993).
RN      [8]
RP      SEQUENCE OF 1-40 FROM N.A.
RX      MEDLINE=90365758; PubMed=2293407;
RA      Crumley G., Dione C.A., Jaye M.;
RT      "The gene for human acidic fibroblast growth factor encodes two
RT      upstream exons alternatively spliced to the first coding exon.";
RT      Biochem. Biophys. Res. Commun. 171:7-13(1990).
RN      [9]
RP      SEQUENCE OF 16-155.
RX      MEDLINE=86296647; PubMed=2427112;
RA      Harper J.W., Strdom D.J., Lobb R.R.;
RT      "Human class I heparin-binding growth factor: structure and homology
RT      to bovine acidic brain fibroblast growth factor.";
RT      Biochemistry 25:4097-4103(1986).
RN      [10]
RP      SEQUENCE OF 16-155.
RX      MEDLINE=86295741; PubMed=3527167;
RA      Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT      "The complete amino acid sequence of human brain-derived acidic
RT      fibroblast growth factor.";
RT      Biochem. Biophys. Res. Commun. 138:611-617(1986).
RN      [11]
RP      SEQUENCE OF 16-155.
RX      MEDLINE=87048871; PubMed=3778488;
RA      Gautschi-Sova P., Mueller T., Boehlen P.;
RT      "Amino acid sequence of human acidic fibroblast growth factor.";
RT      Biochem. Biophys. Res. Commun. 140:874-880(1986).
RN      [12]
RP      SEQUENCE OF 16-47.
RX      MEDLINE=86186784; PubMed=3964259;
RA      Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT      "Human brain-derived acidic and basic fibroblast growth factors:
RT      amino terminal sequences and specific mitogenic activities.";
RT      Biochem. Biophys. Res. Commun. 135:541-548(1986).
RN      [13]
RP      SEQUENCE OF 16-49.
RX      MEDLINE=86275260; PubMed=3732516;
RA      Gautschi P., Frater-Schroeder M., Boehlen P.;
RT      "Partial molecular characterization of endothelial cell mitogens from
RT      human brain: acidic and basic fibroblast growth factors.";
RT      FEBS Lett. 204:203-207(1986).
RN      [14]
RP      X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS).
RX      MEDLINE=96194129; PubMed=8652550;
RA      Blaber M., Disalvo J., Thomas K.A.;
RT      "X-ray crystal structure of human acidic fibroblast growth factor.";
RT      Biochemistry 35:2086-2094(1996).
RN      [15]
RP      STRUCTURE BY NMR OF 24-155.
RX      MEDLINE=94358885; PubMed=7521397;
RA      Pineda-Lucena A., Jimenez M.A., Nieto J.L., Santoro J., Rico M.,
RA      Gimenez-Gallego G.;
RT      "1H-NMR assignment and solution structure of human acidic fibroblast
RT      growth factor activated by inositol hexasulfate.";
RT      J. Mol. Biol. 242:81-98(1994).
RN      [16]
RP      STRUCTURE BY NMR OF 24-155.
RX      MEDLINE=97107535; PubMed=8950275;
RA      Pineda-Lucena A., Jimenez M.A., Lozano R.M., Nieto J.L., Santoro J.,
RA      Rico M., Gimenez-Gallego G.;
RT      "Three-dimensional structure of acidic fibroblast growth factor in
RT      solution: effects of binding to a heparin functional analog.";
RT      J. Mol. Biol. 264:162-178(1996).
RN      [17]
RP      STRUCTURE BY NMR OF 25-155.
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RX MEDLINE-98387896; PubMed-9719643;
RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gimenez-Gallego G.;
RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
RT 6-naphthylmaleimidesulfonate: a minimal model for the anti-tumoral
RT action of suramin and suradistas.";
RL J. Mol. Biol. 281:899-915(1998).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES bFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL, M13361; AAA79245.1; -
DR EMBL, X51943; CA36206.1; -
DR EMBL, M30492; AAA52446.1; -
DR EMBL, M30490; AAA52446.1; JOINED.
DR EMBL, M30491; AAA52446.1; JOINED.
DR EMBL, M60515; AAA51672.1; -
DR EMBL, M60516; AAA51673.1; -
DR EMBL, M23087; AAA52638.1; -
DR EMBL, M23086; AAA52638.1; JOINED.
DR EMBL, S67291; AAB29057.2; -
DR EMBL, X65778; CAA46661.1; -
DR PIR, A23553; A23553.
DR PIR, A24243; A24243.
DR PIR, A24301; A24301.
DR PIR, A24662; A24662.
DR PIR, A24820; A24820.
DR PIR, A26386; A26386.
DR PIR, A33665; A33665.
DR PIR, S18217; S18217.
DR PDB, ZAFG; 15-OCT-95.
DR PDB, JAXM; 22-APR-98.
DR PDB, 2AXM; 22-APR-98.
DR PDB, 1RML; 11-NOV-98.
DR MIM, 131220; -
DR InterPro, IPR002209; HBGF_FGF.
DR InterPro, IPR002348; IIL_HBGF.
DR Pfam, PF00167; FGF; 1.
DR PRINTS; PR00262; IILHBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
KW 3D-structure.
FT CHAIN 1 15 HEPARIN-BINDING GROWTH FACTOR 1.
FT MOD_RES 2 2 ACETYLATION.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17460 MW; F586EBBF09F1580 CRC64;

Query Match 50.5%; Score 418.5; DB 1; Length 155;
Best Local Similarity 54.8%; Pred. No. 1,9e-36;
Matches 86; Conservative 17; Mismatches 49; Indels 5; Gaps 2;

QY 1 MAAGSTTPALPEDGSGAFPGRKPKRYCKNGGFFLRHPDGRVGVREKSDPHI 60
DB 1 MAEGSTTTTALTEKN---LPPGNKKRPKRLATCSNGHRLRLPDTGDTGRSDQHI 57
QY 61 KIQLQAEERGVSIVKGVANRYLAMKEDGRLLASKVCVTDECFEERLESNNVTYRSKY 120

DB 58 QLOLSAEVSGVYIKSTETGTGYLMDIDGLYSGQTPNEBCLFLERLENNYNTYISKKH 117
QY 121 S--SMYVALKRTGYKLGKTPGOKAILFLPMSAKS 155
DB 118 AKKNMFWLKKKNGSKOKRPRHYGOKAILFLPVPSS 154

RESULT 13
FGL_MOUSE
ID FGL_MOUSE STANDARD; PRT; 155 AA.
AC P10935;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1989 (Rel. 11, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN FGL OR FGF-1 OR FGFA.
OS Mus musculus (Mouse), and
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090, 10116;
RN [1]
RP SEQUENCE FROM N.A.
RC SPECIES=Rat;
RX MEDLINE=89240051; PubMed=2470029;
RA Goodrich S., Yan G.C., Bahnenburg K., Mansson P.E.;
RT "The nucleotide sequence of rat heparin binding growth factor 1
RT (HBGF-1)."
RL Nucleic Acids Res. 17:2867-2867(1989).
RN [2]
RP SEQUENCE FROM N.A.
RC SPECIES=Mouse;
RX MEDLINE=90201563; PubMed=2318343;
RA Hebert J.M., Basillio C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [3]
RP SEQUENCE FROM N.A.
RC SPECIES=Mouse;
RX MEDLINE=97128312; PubMed=8972905;
RA Madai F., Hackshaw K.V., Chiu I.M.;
RT "Cloning and characterization of the mouse Fgf-1 gene.";
RL Gene 179:231-236(1996).
RN [4]
RP SEQUENCE FROM N.A.
RC SPECIES=Mouse; STRAIN=BA1B/C;
RX MEDLINE=97094746; PubMed=8939980;
RA Alam K.Y., Frostholm A., Hackshaw K.V., Evans J.E., Rotter A.,
RA Chiu I.M.;
RT "Characterization of the 1b promoter of fibroblast growth factor 1
RT and its expression in the adult and developing mouse brain.";
RL J. Biol. Chem. 271:30263-30271(1996).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL, X14232; CAA32448.1; -
DR EMBL, M30641; AAA37618.1; -
DR EMBL, U36459; AAC52969.1; -

DR EMBL: U36457; AAC52969.1; JOINED.
 DR EMBL: U36458; AAC52969.1; JOINED.
 DR EMBL: U67610; AAC52907.1; -
 DR PIR: S04147; S04147.
 DR PIR: D37360; D37360.
 DR HSSP: P05230; 1RML.
 DR MGD: MGI:95515; Fgf1.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; IL1HBGF.
 DR Prodom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 FT PROPEP 1 15
 FT CHAIN 16 155
 FT BINDING 24 28 HEPARIN-BINDING GROWTH FACTOR 1.
 FT BINDING 113 116 HEPARIN (POTENTIAL).
 SQ SEQUENCE 155 AA; 17418 MW; 8880E4FF0FB4161 CRC64;

Query Match 49.9%; Score 413.5; DB 1; Length 155;
 Best Local Similarity 54.1%; Pred. No. 6.3e-36;
 Matches 85; Conservative 18; Mismatches 49; Indels 5; Gaps 2;

OY 1 MAGSTTLPALPEDGSGAPPGHFKDPKRLYCKNGGFELTHPDGRVDYREKSDPHI 60
 DB 1 MAGEITTFALTTERN--LPLGNKRPKLLYCSNGHFLNLPDGYDGRSDQHI 57
 OY 61 KLQLAERGVVSIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 DB 58 QQLSAESGEVYIKSTETGYLADMTSGLLYGSQTPNECELFLELEENHNTYTSKH 117
 OY 121 S--SWYVALKRTGQYKLGPKTGPQKAILFLPM 151
 DB 118 AEKNMFVGLKNGSKCRGPRTHYGOKAILFLPLPVSS 154

RESULT 14
 FGFL_PIG STANDARD; PRT; 152 AA.
 AC P20002;
 DT 01-FEB-1991 (Rel. 17, Created)
 DT 01-FEB-1996 (Rel. 33, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (acidic fibroblast growth factor) (AFGF) (Alpha-endothelial cell growth factor) (Fragment).
 DE GN FGF1 OR FGF-1.
 OS Sus scrofa (Pig).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Suidae; Sus.
 NCBI_TaxID=9823;
 OX NCBI_TaxID=9823;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE-Heart;
 RX MEDLINE=92062117; PubMed=1719973;
 RA Schmidt M., Sharma H.S., Schott R.J., Schaper W.;
 RT "Amplification and sequencing of mRNA encoding acidic fibroblast growth factor (afgf) from porcine heart."
 DE Biochem. Biophys. Res. Commun. 180:853-859(1991).
 RN [2]
 RP SEQUENCE OF 22-41.
 RX MEDLINE=89231704; PubMed=2714282;
 RA Quinkler W., Maasberg M., Bernotat-Danielowski S., Luethe N.,
 RA Sharma H.S., Schaper W.;
 RT "Isolation of heparin-binding growth factors from bovine, porcine and canine hearts."
 DE Eur. J. Biochem. 181:67-73(1989).
 CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND

CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -!- SUBUNIT: MONOMER.
 CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY THAN DOES BPGF.
 CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 DR EMBL: X60317; CAA42869.1; -
 DR PIR: S03954; S03954.
 DR HSSP: P05230; 2AXM.
 DR InterPro: IPR002209; HBGF_FGF.
 DR Pfam: PF00167; FGF; 1.
 DR Prodom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 FT PROPEP 1 15
 FT CHAIN 16 152
 FT BINDING 22 >152 HEPARIN-BINDING GROWTH FACTOR 1.
 FT BINDING 113 116 HEPARIN (POTENTIAL).
 FT CONFLICT 31 31 C -> S (IN REF. 2).
 FT CONFLICT 39 39 R -> Y (IN REF. 2).
 FT NON_TER 152 152
 SQ SEQUENCE 152 AA; 17103 MW; AE853B0A92F9ABF4 CRC64;

Query Match 49.8%; Score 412.5; DB 1; Length 152;
 Best Local Similarity 54.9%; Pred. No. 7.8e-36;
 Matches 84; Conservative 18; Mismatches 46; Indels 5; Gaps 2;

OY 1 MAGSTTLPALPEDGSGAPPGHFKDPKRLYCKNGGFELTHPDGRVDYREKSDPHI 60
 DB 1 MAGEITTFALTTERN--LPLGNKRPKLLYCSNGHFLNLPDGYDGRSDQHI 57
 OY 61 KLQLAERGVVSIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 DB 58 QQLSAESGEVYIKSTETGYLADMTSGLLYGSQTPNECELFLELEENHNTYTSKH 117
 OY 121 S--SWYVALKRTGQYKLGPKTGPQKAILFLPM 151
 DB 118 AEKNMFVGLKNGSKCRGPRTHYGOKAILFLPL 150

RESULT 15
 FGFL_BOVIN STANDARD; PRT; 155 AA.
 AC P03968;
 DT 23-OCT-1986 (Rel. 02, Created)
 DT 01-MAR-1989 (Rel. 10, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (acidic fibroblast growth factor) (AFGF) (prolactin) (Endothelial cell growth factor beta and alpha chains) (Acidic eye-derived growth factor II) (EDGF II).
 DE GN FGF1 OR FGF-1 OR FGFA OR HBGF-1 OR AFGF.
 OS Bos taurus (Bovine).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae; Bovidae; Bovinae; Bos.
 NCBI_TaxID=9913;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE-Retina;
 RX MEDLINE=89083506; PubMed=3205724;
 RA Halley C., Courtois Y., Laurent M.;

RT "Nucleotide sequence of bovine acidic fibroblast growth factor cDNA.";
RL Nucleic Acids Res. 16:10913-10913(1988).
RN [12]
RP SEQUENCE FROM N.A.
RC TISSUE-Retina:
RX MEDLINE=89078619; PubMed=2849564;
RA Altieri J., Halley C., Brou C., Soussi T., Courtois Y., Laurent M.;
RT "Characterization of a bovine acidic FGF cDNA clone and its
RL expression in brain and retina.";
RN FEBS Lett. 242:41-46(1988).
[13]
RP SEQUENCE OF 2-155.
RX MEDLINE=87016918; PubMed=3532107;
RA Burgess W.H., Mehlman T., Marshak D.R., Fraser B.A., Maciag T.;
RT "Structural evidence that endothelial cell growth factor beta is the
RT precursor of both endothelial cell growth factor alpha and acidic
RL fibroblast growth factor.";
RN Proc. Natl. Acad. Sci. U.S.A. 83:7216-7220(1986).
[14]
RP SEQUENCE OF 2-155.
RX MEDLINE=87026586; PubMed=3768327;
RA Crabb J.W., Armes L.G., Carr S.A., Johnson C.M., Roberts G.D.,
RT "Complete primary structure of prostatropin, a prostate epithelial
RT cell growth factor.";
RN Biochemistry 25:4988-4993(1986).
[15]
RP SEQUENCE OF 16-155.
RX MEDLINE=86070224; PubMed=4071057;
RA Gimenez-Gallego G., Rodkey J., Bennett C., Rios-Candelore M.,
RA Disalvo J., Thomas K.;
RT "Brain-derived acidic fibroblast growth factor: complete amino acid
RT sequence and homologies.";
RL Science 230:1385-1388(1985).
[16]
RP SEQUENCE OF 16-44, AND COMPOSITION.
RX MEDLINE=86055750; PubMed=4065099;
RA Boehlen P., Esch F., Baird A., Gospodarowicz D.;
RT "Acidic fibroblast growth factor (FGF) from bovine brain:
RT amino-terminal sequence and comparison with basic FGF.";
RL EMBO J. 4:1951-1956(1985).
[17]
RP SEQUENCE OF 16-56 FROM N.A.
RX MEDLINE=86261806; PubMed=2425435;
RA Abraham J.A., Merz A., Whang J.L., Tumolo A., Friedman J.,
RA Hjerild K.A., Gospodarowicz D., Fiddes J.C.;
RT "Nucleotide sequence of a bovine clone encoding the angiogenic
RT protein, basic fibroblast growth factor.";
RL Science 233:545-548(1986).
[18]
RP SEQUENCE OF 16-45.
RX MEDLINE=89231704; PubMed=2714282;
RA Quinkler W., Maasberg M., Bernotat-Danielowski S., Luethke N.,
RA Sharma H.S., Schaper W.;
RT "Isolation of heparin-binding growth factors from bovine, porcine and
RT canine hearts.";
RN Eur. J. Biochem. 181:67-73(1989).
[19]
RP SEQUENCE OF 1-18 FROM N.A.
RA Philippe J.M., Renaud F., Desset S., Laurent M.;
RL Submitted (JUL-1992) to the EMBL/GenBank/DBJ databases.
[10]
RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
RX MEDLINE=91095983; PubMed=1702556;
RA Zhu X., Komiyama H., Chirino A., Faham S., Fox G.M., Arakawa T.,
RA Hsu B.T., Rees D.C.;
RT "Three-dimensional structures of acidic and basic fibroblast growth
RT factors.";
RL Science 251:90-93(1991).
CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.

CC -!- SUBUNIT: MONOMER.
CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES bFGF.
CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; M13439; AAA30516.1; -;
DR EMBL; X13221; CAA31610.1; -;
DR EMBL; X14032; CAA32192.1; -;
DR EMBL; M35608; AAA30517.1; -;
DR EMBL; X66446; CAA47063.1; -;
DR EMBL; M97660; AAA30363.1; -;
DR EMBL; M97661; AAA30564.1; -;
DR PIR; A01385; GKBOA.
DR PIR; A25043; A25043.
DR PIR; B25043; B25043.
DR PIR; C25043; C25043.
DR PIR; A24477; A24477.
DR PIR; B24663; B24663.
DR PIR; S02102; S02102.
DR PDB; 1BAR; 31-OCT-93.
DR PDB; 1AEC; 31-OCT-93.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IIL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IILHBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
KW 3D-structure.
FT PROPEP 1 15
FT CHAIN 2 155
FT CHAIN 16 155
FT CHAIN 22 155
FT MOD_RES 2 28
FT BINDING 113 116
FT STRAND 27 31
FT STRAND 32 34
FT STRAND 37 40
FT TURN 42 43
FT STRAND 46 49
FT STRAND 55 57
FT HELIX 59 61
FT STRAND 69 69
FT STRAND 71 73
FT STRAND 79 82
FT TURN 84 85
FT STRAND 87 91
FT HELIX 96 98
FT STRAND 100 100
FT STRAND 103 104
FT TURN 106 107
FT STRAND 110 111
FT STRAND 113 114
FT TURN 116 121
FT STRAND 123 123
FT STRAND 126 126
FT STRAND 128 129
FT STRAND 132 132
FT STRAND 134 134
FT HELIX 135 137
FT TURN 140 141
FT TURN 144 145
FT STRAND 147 150

ENDOTHELIAL CELL GROWTH FACTOR BETA.
HEPARIN-BINDING GROWTH FACTOR 1.
ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
ACETYLATION.
HEPARIN (POTENTIAL).
HEPARIN (POTENTIAL).

SQ SEQUENCE 155 AA; 17493 MW; F636641F189F9BFD CRC64;

Query Match 48.68; Score 402.5; DB 1; Length 155;

Best Local Similarity 52.98; Pred. No. 8.8e-35; Matches 83; Conservative 20; Mismatches 49; Indels 5; Gaps 2;

```

QY 1 MAAGSITTLPALPEDGSGAFPPGHFKDPKRLYCKNGSGFRLIHPDGRVDGVREKSDPHI 60
    || || || || || || || || || || || || || || || || || || || || ||
Db 1 MABGETTFTALTETFN--LPLGNKKPKLLIYCSNGSYFLRIIPDGTIVDGTIKDRSDQHI 57
    :||| || | || | :||| || | : || | || | :||| || | :||| || |
QY 61 KLOLQAEERGVSIGVCANRYLAKMEDGRLASKCVTDECFFERLESNNYNTYRSRY 120
    :||| || | || | :||| || | : || | || | :||| || | :||| || |
Db 58 QLOLCAESIGEVYIKSTETGQFLAMDTDGLYGSQTPNEECFLERLEENHNTYISKKH 117
    :||| || | || | :||| || | : || | || | :||| || | :||| || |
QY 121 SS--WYVALKRTGQYKLGPKTGPGOKALILFLPMsAKS 155
    : || || | : || || | || || || || || || || || || || || || || || ||
Db 118 AEKHWFGVGLKKNRSGIKLPRTHTFGOKALILFLPLVSS 154
    : || || | : || || | || || || || || || || || || || || || || || ||

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Search completed: June 7, 2002, 14:46:42
 Job time: 613 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:13; Search time 78.17 Seconds

(without alignments)
343.024 Million cell updates/sec

Title: US-09-802-365-6

Perfect score: 828
Sequence: 1 MAAGSITTLPALPEDGSGA.....GPKTGPCKALLFLPMASAKS 155

Scoring table: BLOSUM62
Gapop 10.0, Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :

SPTREMBL_19:*
1: sp_archaea:*
2: sp_bacteria:*
3: sp_fungi:*
4: sp_human:*
5: sp_invertebrate:*
6: sp_mammal:*
7: sp_mhc:*
8: sp_organelle:*
9: sp_phage:*
10: sp_plant:*
11: sp_rodent:*
12: sp_virus:*
13: sp_vertebrate:*
14: sp_unclassified:*
15: sp_virus:*
16: sp_bacteriophage:*
17: sp_archaeop:

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	817	98.7	196	4 P78443	P78443 homo sapien
2	766	92.5	153	11 Q925A3	Q925A3 mus musculu
3	740	89.4	170	11 Q60487	Q60487 cavia porce
4	702	84.8	155	13 Q90Y92	Q90Y92 cynops pyrr
5	693	83.7	130	6 Q77767	Q77767 canis fami
6	576	69.6	111	6 Q9BDX1	Q9BDX1 macaca mula
7	572	69.1	108	6 Q9N1S7	Q9N1S7 capreolus c
8	565	68.2	125	13 Q98RD8	Q98RD8 cynops pyrr
9	488	58.9	109	11 Q925A3	Q925A3 mus musculu
10	484	58.5	112	11 Q925A3	Q925A3 mus musculu
11	480.5	58.0	146	13 Q07659	Q07659 gallus gall
12	479	57.9	101	13 P79706	P79706 cynops pyrr
13	342	41.3	76	6 Q9NOV2	Q9NOV2 ovis aries
14	328	39.6	114	4 Q00527	Q00527 homo sapien
15	328	39.6	114	4 Q16443	Q16443 homo sapien
16	300	36.2	106	6 Q9N1S8	Q9N1S8 capreolus c

17	246	29.7	196	13 Q9YH31	Q9YH31 notophthalm
18	242	29.2	124	13 Q90X05	Q90X05 ambystoma m
19	228	27.5	206	13 Q9YGD8	Q9YGD8 oncorhynch
20	221	26.7	111	13 Q90X01	Q90X01 ambystoma m
21	215	26.0	208	6 Q951J2	Q951J2 sus scrofa
22	210	25.4	191	13 Q9DRC9	Q9DRC9 brachydanio
23	207	25.0	208	13 Q9PYV1	Q9PYV1 xenopus lae
24	207	25.0	212	11 Q9ESL9	Q9ESL9 mus musculu
25	205.5	24.8	207	11 Q9ESL8	Q9ESL8 mus musculu
26	205.5	24.8	207	11 Q9ER05	Q9ER05 mus musculu
27	203	24.5	208	6 Q95K97	Q95K97 macaca fasc
28	203	24.5	212	11 Q9EST9	Q9EST9 rattus norv
29	202.5	24.5	212	13 Q42407	Q42407 gallus gall
30	195.5	23.6	134	13 Q90X03	Q90X03 ambystoma m
31	194.5	23.5	213	6 Q9N1B9	Q9N1B9 ovis aries
32	193	23.3	208	4 Q96P59	Q96P59 homo sapien
33	188	22.7	112	13 Q90XP9	Q90XP9 ambystoma m
34	186.5	22.5	186	6 Q95L47	Q95L47 mustela vis
35	186.5	22.5	237	13 Q91A16	Q91A16 gallus gall
36	185.5	22.4	252	11 Q89096	Q89096 rattus norv
37	185.5	22.4	253	13 Q91A15	Q91A15 gallus gall
38	183.5	22.2	59	4 Q9UBK1	Q9UBK1 homo sapien
39	180.5	21.8	185	11 Q9ERN5	Q9ERN5 rattus norv
40	177.5	21.4	181	11 Q924B4	Q924B4 rattus norv
41	176.5	21.3	127	4 Q99517	Q99517 homo sapien
42	175.5	21.2	302	11 Q9CSX5	Q9CSX5 mus musculu
43	174.5	21.1	59	4 Q16089	Q16089 homo sapien
44	174.5	21.1	60	4 Q16588	Q16588 homo sapien
45	172.5	20.8	199	13 Q91A13	Q91A13 gallus gall

ALIGNMENTS

RESULT	ID	PRELIMINARY	PRT	196 AA.
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AC	P78443			
DT	01-MAY-1997 (TREMBLrel. 03, Created)			
DT	01-MAY-1997 (TREMBLrel. 03, Last sequence update)			
DT	01-JUN-2001 (TREMBLrel. 17, Last annotation update)			
DE	21 KDA BASIC FIBROBLAST GROWTH FACTOR (BFGF).			
GN	BFGF2.			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.			
OX	NCBI_TaxID=9606;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=93038590; PubMed=2538817;			
RA	Prats H., Kaghad M., Prats A.C., Klagsbrun M., Lelias J.M.,			
RA	Thomas E.J.;			
RT	"Reverse transcription with nested polymerase chain reaction shows			
RT	expression of basic fibroblast growth factor transcripts in human			
RT	granulosa and cumulus cells from in vitro fertilisation patients.";			
RL	Biochem. Biophys. Res. Commun. 187:1227-1231(1992).			
DR	EMBL; J04513; AAA52532.1; -			
DR	EMBL; S47380; AAD13853.1; -			
DR	HSSP; P09038; 1BFF.			
DR	InterPro; IPR002209; HBGF_FGF.			
DR	InterPro; IPR002348; IL1_HBGF.			
DR	Pfam; PF00167; FGF. 1.			
DR	PRINTS; PR00262; IL1HBGF.			
DR	ProDom; PD000831; HBGF_FGF. 1.			
DR	SMART; SM00442; FGF. 1.			

DR PROSITE; PS00247; HBGF_FGF; 1.
SQ SEQUENCE 196 AA; 21203 MW; D6B5447137E60343 CRC64;

Query Match 98.7%; Score 817; DB 4; Length 196;
Best Local Similarity 98.7%; Pred. No. 4e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITLPLPEDGSGAFPPGHFKDKRLYCKNGGFRLRIHPDGVGVREKSDPHI 60
DB 42 MAAGSITLPLPEDGSGAFPPGHFKDKRLYCKNGGFRLRIHPDGVGVREKSDPHI 101
QY 61 KLOIQAERGVVSTKGVCANRYLAKMEKGRLASCVTDECFPERLESNNYRSRKY 120
DB 102 KLOIQAERGVVSTKGVCANRYLAKMEKGRLASCVTDECFPERLESNNYRSRKY 161
QY 121 SSWYVALKRTGQYKLGKPTGPGOKAILFLPMSAKS 155
DB 162 TSWYVALKRTGQYKLGKPTGPGOKAILFLPMSAKS 196

RESULT 2
Q925A3 PRELIMINARY; PRT; 153 AA.
AC Q925A3;
DT 01-DEC-2001 (TREMblrel, 19, Created)
DT 01-DEC-2001 (TREMblrel, 19, Last sequence update)
DE 01-DEC-2001 (TREMblrel, 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
CN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN-FVB/N.
RA Dicks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RT expressed in mouse embryos."
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL: AY027551; AAK52308.1; -
SQ SEQUENCE 153 AA; 17024 MW; AD8163CDBA2FAAB CRC64;

Query Match 92.5%; Score 766; DB 11; Length 153;
Best Local Similarity 94.2%; Pred. No. 1.1e-75;
Matches 146; Conservative 4; Mismatches 3; Indels 2; Gaps 2;

QY 1 MAAGSITLPLPEDGSGAFPPGHFKDKRLYCKNGGFRLRIHPDGVGVREKSDPHI 60
DB 1 MAAGSITLPLPEDGSGAFPPGHFKDKRLYCKNGGFRLRIHPDGVGVREKSDPHI 59
QY 61 KLOIQAERGVVSTKGVCANRYLAKMEKGRLASCVTDECFPERLESNNYRSRKY 120
DB 60 KLOIQAERGVVSTKGVCANRYLAKMEKGRLASCVTDECFPERLESNNYRSRKY 118
QY 121 SSWYVALKRTGQYKLGKPTGPGOKAILFLPMSAKS 155
DB 119 SSWYVALKRTGQYKLGKPTGPGOKAILFLPMSAKS 153

RESULT 3
Q60487 PRELIMINARY; PRT; 170 AA.
AC Q60487;
DT 01-NOV-1996 (TREMblrel, 01, Created)
DT 01-MAY-2000 (TREMblrel, 13, Last sequence update)
DT 01-JUN-2001 (TREMblrel, 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2 (FGF-2) (FIBROBLAST GROWTH FACTOR, BASIC)
DE (HBGF) (HEPARIN-BINDING GROWTH FACTOR 2) (HBGF-2) (PROSTATROPIN)
DE (PROSTATIC GROWTH FACTOR) (FRAGMENTS).
GN FGF2.

OS Cavia porcellus (Guinea pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Hystricognathi; Cavidae; Cavia.
OX NCBI_TaxID=10141;
RN [1]
RP SEQUENCE OF 53-170 FROM N.A.
RC TISSUE=PROSTATE;
RA Ricciardelli C.;
RL Submitted (JAN-1996) to the EMBL/GenBank/DBJ databases.
RP SEQUENCE OF N-TERMINUS, PARTIAL SEQUENCE, AND ALTERNATIVE SPLICING.
RN [2]
RX MEDLINE=69273588; PubMed=2730645;
RA Sommer A., Moscoteelli D., Rifkin D.B.;
RT "An amino-terminally extended and post-translationally modified form
RT of a 25kd basic fibroblast growth factor."
RL Biochem. Biophys. Res. Commun. 160:1267-1274(1989).
RN [3]
RP PARTIAL SEQUENCE, AND METHYLATION.
RX MEDLINE=91322114; PubMed=1713785;
RA Burgess W.H., Bizik J., Mehman T., Quarto N., Rifkin D.B.;
RT "Direct evidence for methylation of arginine residues in high
RT molecular weight forms of basic fibroblast growth factor."
RL Cell Regul. 2:87-93(1991).
RN [4]
RP CHARACTERIZATION.
RC TISSUE-BRAIN;
RX MEDLINE=87289686; PubMed=3475702;
RA Moscoteelli D., Joseph-Silverstein J., Manejias R., Rifkin D.B.;
RT "Mr 25,000 heparin-binding protein from guinea pig brain is a high
RT molecular weight form of basic fibroblast growth factor."
RL Proc. Natl. Acad. Sci. U.S.A. 84:5778-5782(1987).
RN [5]
RP FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROTROPHIC
RP FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
RP PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
RP HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR
RP MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
RP PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
RP SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
RP ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
RP -1 SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGFR1 AND AT LEAST
RP ONE HEPARAN SULFATE (BY SIMILARITY).
RP -1 ALTERNATIVE PRODUCTS: AT LEAST TWO ISOFORMS: 18 KDA AND 25 KDA
RP (SHOWN HERE); MAY BE PRODUCED BY USE OF ALTERNATIVE TRANSLATION
RP INITIATION SITES. BOTH FORMS ARE ACTIVE.
RP -1 PTM: THE N-TERMINAL OF ISOFORM 18 KDA IS BLOCKED (PROBABLY).
RP -1 SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
RP -1 CAUTION: THIS IS A CONCEPTUAL TRANSLATION; MANY FRAMESHIFTS WERE
RP INTRODUCED FROM RESIDUES 77, 88, 93 AND 149 DOWNWARD TO EXTEND THE
RP SIMILARITY TO THE HUMAN SEQUENCE AS WELL AS ON THE BASIS OF
RP PARTIAL AMINO-ACID SEQUENCING.
RN EMBL: L75974; AA85394.1; ALT_FRAME.
RN HSSP: P09038; 1BLA.
RN InterPro: IPR002209; HBGF_FGF.
RN InterPro: IPR002348; IL1_HBGF.
RN Pfam: PF00167; FGF_1.
RN PRINTS: PRO00262; TLHBGF.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Vascularization; Heparin-binding;
KW Alternative initiation; Methylation; Phosphorylation;
KW developmental protein.
FT NON_TER 1
FT NON_CONS 15
FT CHAIN <1 170
FT CHAIN 22 170
FT INT_MET 22 22
FT DOMAIN 11 14
FT NON_CONS 50 51
FT SITE 61 63
FT SITE 103 105
FT BINDING 50 51
FT BINDING 105 105

25 KDA BASIC FIBROBLAST GROWTH FACTOR.
18 KDA BASIC FIBROBLAST GROWTH FACTOR.
FOR 18 KDA FORM.
POLY-ALA.
CELL ATTACHMENT SITE (POTENTIAL).
CELL ATTACHMENT SITE (POTENTIAL).
HEPARIN (BY SIMILARITY).
HEPARIN (BY SIMILARITY).

FT BINDING 143 159 HEPARIN (BY SIMILARITY).
 FT MOD_RES 4 4 METHYLATION (MONO- OR DI-).
 FT MOD_RES 6 6 METHYLATION (MONO- OR DI-).
 FT MOD_RES 8 8 METHYLATION (MONO- OR DI-).
 FT MOD_RES 88 88 PHOSPHORYLATION (BY SIMILARITY).
 FT MOD_RES 136 136 PHOSPHORYLATION (BY SIMILARITY).
 SO SEQUENCE 170 AA; 18354 MW; F36BDBC736E5FEBC CRC64;

Query Match 89.4%; Score 740; DB 11; Length 170;
 Best Local Similarity 91.6%; Pred. No. 8.3e-73;
 Matches 142; Conservative 2; Mismatches 5; Indels 6; Gaps 1;

OY 1 MAAGSITLPALEDDGSGAFPPGHFKDPKRLYCKNGGFLRIHPDGRVGVREKSDPHI 60
 DB 22 MAAGSITLPALEDDGSGAFPPGHFKDP-----NGGFLRIHPDGRVGVREKSDPHI 75
 OY 61 KIQLAEEERGVSIVKGCANRYLAKMEDGRLLASCVTEDECFEERLESNNYNTYRSRY 120
 DB 76 KIQLAEEERGVSIVKGCANRYLAKMEDGRLLASCVTEDECFEERLESNNYNTYRSRY 135
 OY 121 SSMYALKRTGOYKLGPKTGPQKAILFLPMSAKS 155
 DB 136 SSMYALKRTGOYKLGSKTGPQKAILFLPMSAKS 170

RESULT 4
 O90Y92 PRELIMINARY; PRT; 155 AA.
 AC O90Y92;
 DT 01-DEC-2001 (TREMBlrel. 19, Created)
 DT 01-DEC-2001 (TREMBlrel. 19, Last sequence update)
 DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
 DE FIBROBLAST GROWTH FACTOR-2.
 GN FGF-2.
 OS Cynops pyrrhogaster (Japanese common newt).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
 OC Amphibia; Batrachia; Caudata; Salamandridae; Salamandridae; Cynops.
 OC NCBI_TaxID=8330;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Susaki K., Nakamura K., Chiba C., Saito T.;
 RT "Expression of FGF2 during newt retinal development and
 regeneration.";
 RL Submitted (JUL-2001) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AB064664; BAB63249.1; -
 SO SEQUENCE 155 AA; 17278 MW; 2B583058538A8D9 CRC64;

Query Match 84.8%; Score 702; DB 13; Length 155;
 Best Local Similarity 85.8%; Pred. No. 1e-68;
 Matches 133; Conservative 8; Mismatches 14; Indels 0; Gaps 0;

OY 1 MAAGSITLPALEDDGSGAFPPGHFKDPKRLYCKNGGFLRIHPDGRVGVREKSDPHI 60
 DB 1 MAAGSITLPALEDDGSGAFPPGHFKDPKRLYCKNGGFLRIHPDGRVGVREKSDPHI 60
 OY 61 KIQLAEEERGVSIVKGCANRYLAKMEDGRLLASCVTEDECFEERLESNNYNTYRSRY 120
 DB 61 KIQLAEEERGVSIVKGCANRYLAKMEDGRLLASCVTEDECFEERLESNNYNTYRSRY 120
 OY 121 SSMYALKRTGOYKLGPKTGPQKAILFLPMSAKS 155
 DB 121 SSMYALKRTGOYKNGSKTGAGOKAILFLPMSAKS 155

RESULT 5
 O77767 PRELIMINARY; PRT; 130 AA.
 AC O77767;
 DT 01-NOV-1998 (TREMBlrel. 08, Created)
 DT 01-NOV-1998 (TREMBlrel. 08, Last sequence update)
 DT 01-JUN-2001 (TREMBlrel. 17, Last annotation update)

DE BASIC FIBROBLAST GROWTH FACTOR (BFGF) (FGF-2) (HEPARIN-BINDING GROWTH
 DE FACTOR 2) (HGF-2) (PROSTATROPIN) (PROSTATIC GROWTH FACTOR)
 DE (FRAGMENT).
 DE BFGF.
 GN Canis familiaris (Dog).
 OS Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
 OC NCBI_TaxID=9615;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=ADRENAL GLAND.
 RA Trocha O.A., Jacobs R.M., Lamare J.;

RT "The role bfgf in canine Hemangiosarcoma.";
 RL Submitted (APR-1998) to the EMBL/GenBank/DBJ databases.
 CC -I- FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROPROTIC
 CC FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
 CC PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
 CC HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR
 CC MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
 CC PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
 CC SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
 CC ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
 CC -I- SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGF1 AND AT LEAST
 CC ONE HEPARIN SULFATE (BY SIMILARITY).
 CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC EMBL: AF060562; AAC35912.1; -
 DR HSSP: P09038; 1BFE.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; ILL_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; ILLHBGF.
 DR Prodom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KM Growth factor; Mitogen; Vascularization; Heparin-binding;
 KM Phosphorylation; Developmental protein.
 FT NON_TER 1 1
 FT SITE 1 23 CELL ATTACHMENT SITE (POTENTIAL).
 FT SITE 23 65 CELL ATTACHMENT SITE (POTENTIAL).
 FT BINDING 63 65 HEPARIN (BY SIMILARITY).
 FT BINDING 10 11 HEPARIN (BY SIMILARITY).
 FT BINDING 65 65 HEPARIN (BY SIMILARITY).
 FT BINDING 103 119 HEPARIN (BY SIMILARITY).
 FT MOD_RES 48 48 PHOSPHORYLATION (BY SIMILARITY).
 FT MOD_RES 96 96 PHOSPHORYLATION (BY SIMILARITY).
 FT NON_TER 130 130
 SO SEQUENCE 130 AA; 14902 MW; 21900876E878FAEA CRC64;

Query Match 83.7%; Score 693; DB 6; Length 130;
 Best Local Similarity 99.2%; Pred. No. 7.9e-68;
 Matches 129; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 26 FNDPRRLYCKNGGFLRIHPDGRVGVREKSDPHIKIQLAEEERGVSIVKGCANRYLAM 85
 DB 1 FNDPRRLYCKNGGFLRIHPDGRVGVREKSDPHIKIQLAEEERGVSIVKGCANRYLAM 60
 OY 86 KEDGRLLASCVTEDECFEERLESNNYNTYRSRYSSWYALKRTGOYKLGPKTGPQK 145
 DB 61 KEDGRLLASCVTEDECFEERLESNNYNTYRSRYSSWYALKRTGOYKLGPKTGPQK 120

OY 146 ILLPMSAKS 155
 DB 121 ILLPMSAKS 130

RESULT 6
 Q9BDX1 PRELIMINARY; PRT; 111 AA.
 AC Q9BDX1;
 DT 01-JUN-2001 (TREMBlrel. 17, Created)
 DT 01-JUN-2001 (TREMBlrel. 17, Last sequence update)
 DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
 DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).

OS Macaca mulatta (Rhesus macaque).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecoidea; Macaca.
NCBI_TaxID=9544;
RN [1]
RP SEQUENCE FROM N.A.
RA Sehon H.S., Keller J.K., Spindel E.R.;
RT "Alterations in Collagen and Elastin Gene Expression in Fetal
RT Pulmonary Vessels in Monkeys Following Prenatal Nicotine Exposure: A
RT Possible Role of alpha7 Nicotinic Acetylcholine Receptor in Persistent
RT Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.
RL EMBL; AF251270; AAK37962.1; -
DR HSSP; P09038; 2FGF.
DR InterPro; IPR002209; HBG_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR ProDom; PD000831; HBG_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBG_FGF; 1.
FT NON_TER 1 111
FT SEQUENCE 111 AA; 12633 MW; EC0967A5261F5487 CRC64;
SQ

Query Match 69.6%; Score 576; DB 6; Length 111;
Best Local Similarity 98.2%; Pred. No. 3.7e-55;
Matches 109; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 43 IHPDGRVGVREKSDPHIKLQAEERGVSIKVCANRYLAMKEDGRLLASKCVTDEC 102
DB 1 IHPDGRVGVREKSDPHIKLQAEERGVSIKVCANRYLAMKEDGRLLASKCVTDEC 60
QY 103 FFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGPKTGGOKAILFLPMSA 153
DB 61 FFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGPKTGGOKAILFLPMSA 111

RESULT 7
Q9N1S7 PRELIMINARY; PRT; 108 AA.
AC Q9N1S7;
DT 01-OCT-2000 (TREMBLrel. 15, Created)
DT 01-OCT-2000 (TREMBLrel. 15, last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN BFGF.
OS Capreolus capreolus (Roe deer).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;
OC Cervidae; Odocoileinae; Capreolus.
NCBI_TaxID=9858;
RN [1]
RP SEQUENCE FROM N.A.
RA TISSUE-TESTIS;
RX MEDLINE-20532861; PubMed-11078967;
RA Wagner A., Blotner S., Goritz F., Fickel J.;
RT "Detection of growth factors in the testis of roe deer (Capreolus
RT capreolus).";
RL Anlm. Reprod. Sci. 64:65-75(2000).
DR EMBL; AF152587; AAF73226.1; -
DR HSSP; P09038; 4FGF.
DR InterPro; IPR002209; HBG_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR ProDom; PD000831; HBG_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBG_FGF; 1.
FT NON_TER 1 108
FT SEQUENCE 108 108

SQ SEQUENCE 108 AA; 12399 MW; 6BC7B7244214567E CRC64;
Query Match 69.1%; Score 572; DB 6; Length 108;
Best Local Similarity 100.0%; Pred. No. 9.8e-55;
Matches 108; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 42 IHPDGRVGVREKSDPHIKLQAEERGVSIKVCANRYLAMKEDGRLLASKCVTDEC 101
DB 1 IHPDGRVGVREKSDPHIKLQAEERGVSIKVCANRYLAMKEDGRLLASKCVTDEC 60
QY 102 FFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGPKTGGOKAILFL 149
DB 61 FFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGPKTGGOKAILFL 108

RESULT 8
Q98TD8 PRELIMINARY; PRT; 125 AA.
AC Q98TD8;
DT 01-JUN-2001 (TREMBLrel. 17, Created)
DT 01-JUN-2001 (TREMBLrel. 17, last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, last annotation update)
DE FIBROBLAST GROWTH FACTOR-2 (FRAGMENT).
GN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandridae; Cynops.
NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RA Mizuno N., Hayashi T., Konoh H., Okamoto M.;
RT "Cynops fibroblast growth factor-2";
RL Submitted (OCT-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB049625; BAB40835.1; -
DR HSSP; P09038; 1BFG.
DR InterPro; IPR002209; HBG_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR ProDom; PD000831; HBG_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBG_FGF; 1.
FT NON_TER 1 1
FT SEQUENCE 125 AA; 14244 MW; 5C27F41DC6E60C13 CRC64;
SQ

Query Match 68.2%; Score 565; DB 13; Length 125;
Best Local Similarity 87.1%; Pred. No. 6.8e-54;
Matches 108; Conservative 6; Mismatches 10; Indels 0; Gaps 0;

QY 32 LYCKNGGFRLRIHPDGRVGVREKSDPHIKLQAEERGVSIKVCANRYLAMKEDGR 91
DB 2 LYCKNGGFRLRINSCKVGVAREKSDSYIKLQAEERGVSIKVCANRYLAMKEDGR 61
QY 92 LASKCVTDECFFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGPKTGGOKAILFLP 151
DB 62 MALKWITDECFFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGPKTGGOKAILFLP 121
QY 152 SAKS 155
DB 122 SAKS 125
RESULT 9
Q925A1 PRELIMINARY; PRT; 109 AA.
AC Q925A1;
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.


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DR Interpro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
FT NON_TER 1 101
FT SEQUENCE 101 AA; 11907 MW; 74A16C866C1F457A CRC64;
SQ

Query Match 57.9%; Score 479; DB 13; Length 101;
Best Local Similarity 88.1%; Pred. No. 1.2e-44;
Matches 89; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

QY 29 PKRLCKNGGFELRHDPGAVDVGREKSDPIKIQLOAEERGVYSIKVCANRYLAMKED 88
DB 1 PKRLCKNGGFELRHDPGAVDVGREKSDPIKIQLOAEERGVYSIKVCANRYLAMKED 60

QY 89 GRLLASKCVTDECFEERLESNNYNTYRSRKYSSMYVALKR 129
DB 61 GRLLASKCVTDECFEERLESNNYNTYRSRKYSDMYVALKR 101

RESULT 13
Q9NOV2 PRELIMINARY; PRT; 76 AA.
AC 09NOV2;
DT 01-OCT-2000 (TREMblrel. 15, Created)
DT 01-OCT-2000 (TREMblrel. 15, Last sequence update)
DT 01-DEC-2001 (TREMblrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN FGF-2.
OS Ovis aries (Sheep).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Caprinae; Ovis.
OC NCBI_TaxID=9940;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=FETAL PLACENTAL ARTERY;
RA Zheng J., Tsai S.C., Magness R.R.;
RT "Growth factor expression in ovine fetal placental artery endothelial
RT cells.";
RL Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL: AF250027; AAF65566.1; -.
DR HSSP: P09038; AFGF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
FT NON_TER 1 76
FT NON_TER 1 76
FT SEQUENCE 76 AA; 8796 MW; 7D984E2F97453B20 CRC64;
SQ

Query Match 41.3%; Score 342; DB 6; Length 76;
Best Local Similarity 100.0%; Pred. No. 7.6e-30;
Matches 65; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 57 DPHIKIQLOAEERGVYSIKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYR 116
DB 1 DPHIKIQLOAEERGVYSIKVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYR 60

QY 117 SRKYS 121
DB 61 SRKYS 65

RESULT 14
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000527 PRELIMINARY; PRT; 114 AA.
ID 000527;
AC 000527;
DT 01-JAN-1998 (TREMblrel. 05, Created)
DT 01-JAN-1999 (TREMblrel. 09, Last sequence update)
DT 01-JUN-2001 (TREMblrel. 17, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN FGF-2 OR FGF2.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OC NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=BLOOD;
RA Handschug K., Glaeser C.;
RT "Polymorphism in the 5' untranslated region of the FGF-2 gene: C to T
RT transition (79 bp upstream of the first Cys codon).";
RL Submitted (MAY-1997) to the EMBL/GenBank/DBJ databases.
RN [2]
RP SEQUENCE FROM N.A.
RC TISSUE=BLOOD;
RA Handschug K., Archoukiah E., Glaeser C.;
RT "Mutations in the 5' untranslated region of the FGF-2 gene: transition
RT G to A on position 19 and transversion G to C on position 97.";
RL Submitted (NOV-1999) to the EMBL/GenBank/DBJ databases.
DR EMBL: Y13468; CAAT3868.1; -.
DR EMBL: AJ250952; CAB61690.1; -.
DR HSSP: P09038; IBFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF_1.
DR ProDom: PD000831; HBGF_FGF_1.
FT NON_TER 114 114
FT SEQUENCE 114 AA; 11688 MW; 98DC6381C1960CID CRC64;
SQ

Query Match 39.6%; Score 328; DB 4; Length 114;
Best Local Similarity 100.0%; Pred. No. 4.3e-28;
Matches 59; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITLPLALPEDGSGAPPGHFKDPKRLYCKNGGFLLRHDPGAVDVGREKSDPH 59
DB 56 MAAGSITLPLALPEDGSGAPPGHFKDPKRLYCKNGGFLLRHDPGAVDVGREKSDPH 114

RESULT 15
Q16443 PRELIMINARY; PRT; 114 AA.
ID 016443;
AC 016443;
DT 01-NOV-1996 (TREMblrel. 01, Created)
DT 01-NOV-1996 (TREMblrel. 01, Last sequence update)
DT 01-JUN-2001 (TREMblrel. 17, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OC NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RC MEDLINE=92152654; PubMed=1785797;
RA Florkiewicz R.Z., Shibata F., Barankiewicz T., Baird A.,
RA Gonzalez A.M., Florkiewicz E., Shah N.;
RT "Basic fibroblast growth factor gene expression.";
RL Ann. N. Y. Acad. Sci. 638:109-126(1991).
DR EMBL: S81809; AAB21432.2; -.
DR HSSP: P09038; IBFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF_1.
DR ProDom: PD000831; HBGF_FGF_1.
FT NON_TER 1 114
FT NON_TER 1 114
FT SEQUENCE 114 AA; 11670 MW; 88DCA49C774D61AA CRC64;
SQ
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Query Match 39.6%; Score 328; DB 4; Length 114;
Best Local Similarity 100.0%; Pred. No. 4,3e-28;
Matches 59; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGGGAPPPGHFKDPKRLCYCKNGGFLLRIHPDGRVDGVREKSDPH 59
|||||
Db 56 MAAGSITTLPALPEDGGGAPPPGHFKDPKRLCYCKNGGFLLRIHPDGRVDGVREKSDPH 114

Search completed: June 7, 2002, 14:46:13
Job time: 629 sec

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GenCore version 4.5
Copyright (c) 1993 - 2000 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: June 7, 2002, 14:35:40 ; Search time 93.91 Seconds

(without alignments)
183.329 Million cell updates/sec

Title: US-09-802-365-8

Perfect score: 826

Sequence: 1 MAAGSITTLPALPEDGSGA.....GSKTGPGRKALFLPMSAKS 155

BLOSUM62

Scoring table: Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 111073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%
Listing first 45 summaries

Database :

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Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	826	100.0	155	8 AAP70301	Sequence of human
2	826	100.0	155	10 AAP94038	Human basic fibrob
3	826	100.0	155	11 AAR05314	Human bFGF
4	826	100.0	155	13 AAR22232	bFGF truncated at
5	826	100.0	155	14 AAR40159	Human bFGF peptide
6	826	100.0	155	16 AAR0777	Fibroblast growth
7	826	100.0	155	16 AAR70204	Human bFGF. Homo
8	826	100.0	155	16 AAR70823	FGF-2. Homo sapie
9	826	100.0	155	18 AAW33338	Human fibronectin
10	826	100.0	155	18 AAW19595	Biologically activ
11	826	100.0	155	19 AAI05456	Fibronectin recept

12	826	100.0	155	19 AAW75712	Fibroblast growth
13	826	100.0	155	19 AAW71379	18 kDa form of fib
14	826	100.0	155	19 AAW53023	Fibroblast growth
15	826	100.0	155	20 AAW93380	18 kD isoform of h
16	826	100.0	155	21 AAB10298	Fibroblast growth
17	826	100.0	155	21 AAY96873	Human fibroblast g
18	826	100.0	155	21 AAY96893	Human fibroblast g
19	826	100.0	155	21 AAY90411	Human fibroblast g
20	826	100.0	155	21 AAY90448	FGF-2 (bFGF), SEQ
21	826	100.0	155	21 AAY32334	Human FGF-2 (bFGF)
22	826	100.0	155	22 AAG65648	Human fibroblast g
23	826	100.0	155	22 AAE11976	Human fibroblast g
24	826	100.0	155	22 AAB85813	Human fibroblast g
25	826	100.0	155	22 AAB89918	Human FGF-2 protel
26	826	100.0	155	22 AAG64317	Human FGF-2 protel
27	826	100.0	155	22 AAG64847	Heart muscle cell
28	826	100.0	155	22 AAB84597	Amino acid sequenc
29	826	100.0	155	22 AAY72909	Truncated form of
30	826	100.0	155	22 AAB61662	FGF2 protein. Hom
31	826	100.0	155	22 AAB50274	Human basic fibrob
32	826	100.0	157	8 AAP71085	Sequence of human
33	826	100.0	158	18 AAW31664	Leaderless protein
34	826	100.0	158	22 AAO08594	Human basic fibrob
35	826	100.0	158	22 AAG78316	Human basic fibrob
36	826	100.0	158	22 AAU04006	Human bFGF encoded
37	826	100.0	165	11 AAR05787	Human bFGF encoded
38	826	100.0	210	11 AAR06685	Recombinant basic
39	826	100.0	210	22 AAB60695	Human basic fibrob
40	826	100.0	210	22 AAB50299	Human basic fibrob
41	826	100.0	210	22 AAB50706	Human fibroblast g
42	826	100.0	211	11 AAR07076	Human fibroblast g
43	826	100.0	410	15 AAR43957	Extended recombin
44	826	100.0	410	15 AAR43958	Saporin/FGF fusion
45	826	100.0	410	16 AAR91067	Saporin/FGF fusion

ALIGNMENTS

RESULT	1
AA70301	AA70301 standard; Protein; 155 AA.
ID	AA70301
XX	AA70301;
AC	AA70301;
XX	
DT	05-JUN-1991 (first entry)
XX	
DE	Sequence of human basic fibroblast growth factor (bFGF).
XX	
XX	Fibroblast growth promoter; mesoderm cell growth promoter;
KW	wound healing.
KM	
XX	
OS	Homo sapiens.
XX	
XX	
FH	Key
FT	Peptide
FT	Protein
FT	Location/Qualifiers
FT	1..9
FT	10..155
FT	/note="claimed"
XX	
XX	EP237966-A.
XX	
PD	23-SEP-1987.
XX	
PE	12-MAR-1987; 87EP-0103601.
XX	
PR	29-SEP-1986; 86JP-0231428.
PR	14-MAR-1986; 86JP-0037919.
PR	09-APR-1986; 86JP-0082699.
PR	09-OCT-1986; 86JP-0241053.
XX	
PA	(TAKE) TAKEDA CHEMICAL IND KK.
XX	
XX	Kurokawa T, Sasada R, Iwane M, Igarashi K;
PI	

XX	WP1: 1987-265363/38.
DR	N-PSSB; AAN70494.
XX	Human basic fibroblast growth factor - produced by recombinant DNA techniques, useful for healing wounds, prophylaxis, thrombolysis and arteriosclerosis treatment, etc.
PT	
PT	
XX	Disclosure: Fig 1; 38pp: English.
PS	
XX	
CC	hbFGF is produced using cDNA prep. from RNA isolated from W138 or IM90 human fibroblasts. hbFGF promotes growth of fibroblasts and other mesoderm-derived cells and is useful for promoting healing of wounds (eg burns), for prophylaxis and treatment of thrombolysis and arteriosclerosis, and as a promoter for cell culture.
CC	
XX	
SQ	Sequence 155 AA;
Query Match	100.0%; Score 826; DB 8; Length 155;
Best Local Similarity	100.0%; Pred. No. 2,9e-80;
Matches	155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
OY	1 MAAGSITTLPALPENGCGSGAPPGHFKPKRKYCKNGGFFLRIHDDGVGDYREKSDPHI 60 Db 1 maagsittlpaipedgsgafppghfkpkrrlycknggfllrhhpdgrvdgyreksdphl 60 OY 61 KLQLDAEERGVSIGVCANRYLAMKEGRLASKCVTDECFPFERLESNNNTYSRSRY 120 kldqgaerdyvstkyvcannrylamkedgrrllaskcvrdecffierleasnnyntyrsky 120 Db 121 TSWYVALKRTGOYKLGSKTGPGEAKILPLMSAKS 155 121 tswyvalkrtgqyklgsktgpqkalilplmsaks 155
RESULT 2	
ID	AAP94038
1D	AAP94038 standard; protein: 155 AA.
XX	
XX	AAP94038;
AC	
AC	
XX	
DT	25-JUN-1990 (first entry)
XX	
DE	Human basic fibroblast growth factor.
XX	
KW	Basic fibroblast growth factor; pUC9-TSF11; pUC9delH3-PTSF-3.
XX	
OS	Homo sapiens.
XX	
FH	Key
FT	Misc-difference 78 Location/Qualifiers
FT	/label=Cys
FT	/note="replaced by Ser or Ala"
FT	Misc-difference 96
FT	/label=Cys
FT	/note="replaced by Ser or Ala"
FT	Misc-difference 128
FT	/label-Lys
FT	/note="replaced by Ser or Glu"
FT	Misc-difference 129
FT	/label=Arg
FT	/note="replaced by Thr"
FT	Misc-difference 138
FT	/label=Lys
FT	/note="replaced by Ser"
FT	Domain 128..138
FT	/label=heparin-binding domain
XX	EP298723-A.
XX	
PD	11-JAN-1989.
XX	

[illegible]

Query Match	100.0%;	Score 826;	DB 11;	Length 155;
Best Local Similarity	100.0%;	Pred. No. 2.9e-80;		
Matches 155;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps
1	MAAGSITLPLALPEDGSGAPRPHPKDPKRLYCKNGSGFLIRIDRGRVGVREKSPHI	60		
1		60		
1	maagsittlplalpedogsgafrpghfkdpkrllyckngsfflirlnpdgrvqgvreksophl	60		
61	KLQLDAEERGVSISKGYCANRYRLAMKEDGRLLAASKCVTDECFEPPERLESNNYNTYRSRKY	120		
61	klqlqaeeryvvsatkgycanryrlamkedgrllaaekvtdeecffeerlesnnyntyrsky	120		
121	TSWYALKRRTGQYKLGSKTGSGGAKAILFLPMSAKS	155		
121	tsywaalkrrtgqykrksgsktgpqgkailflpmsaks	155		

RESULT	4
AA022232	AA022232 standard; protein: 155 AA.
AC	AA022232;
AD	23-JUN-1992 (first entry)
AE	bGFG truncated at its N-terminus.
AF	Basic fibroblast growth factor; adduct; heparin; heparan sulphate;
AG	pepsin A; cathepsin D; wounds; burns.
AH	Synthetic.
AI	WO9202539-A.
AJ	20-FEB-1992.
AK	30-JUL-1991; 91WO-EP01428.
AL	02-AUG-1990; 90GB-0017008.
AM	(FARM) FARMITALIA C ERBA SRL.
AN	Monzan P, Paul F, Belvedere D, Sarmientos P;
AO	WPI; 1992-080021/10.
AP	Prepn. of basic fibroblast growth factor - by forming adduct with
AQ	heparin or heparan sulphate and cleaning with pepsin A or
AR	cathepsin D
AS	Claim 4; Page 27; 36pp; English.
AT	The peptide sequence was deduced from the synthetic DNA sequence
AW	pred. as described in EP-363675. E. coli cells transformed with the
AX	synthetic DNA were lysed and the supernatant purified, giving a
AY	50:50 mixture of a 154 residue bGFG (2-155) having the amino acid
AZ	sequence of the 155 residue form (Abraham et al., Science, 233, 545-

[illegible]

```

RESULT 5
AAR40159
ID AAR40159 standard; peptide; 155 AA.
XX
XX AAR40159;
XX
XX 07-FEB-1994 (first entry)
XX
DE Human bFGF peptide fragment #1.
XX
XX Human; fibronectin; FN; fibroblast cell growth factor; FGF;
KM fusion; cell adhesion; cell growth; anti-aging; cosmetics;
KM wound healing; surgery.
XX
XX Homo sapiens.
XX
XX JP05178897-A.
XX
XX 20-JUL-1993.
XX
XX 05-MAR-1992; 92JP-0083220.
XX
XX 14-OCT-1991; 91JP-0291959.
XX
XX (TAKI ) TAKARA SHUZO CO LTD.
XX
XX WPI; 1993-261656/33.
XX
XX N-PSDB; AAQ46943.
XX
PT Synthetic functional polypeptide to promote wound healing, etc.
PT contg. cell adhesion polypeptide from fibronectin and fibroblast
PT growth factor polypeptide, opt. linked by spacer
XX
XX Disclosure: Page 7; 13pp; Japanese.
XX
XX The sequences given in AAR40158-63 represent human fibronectin (FN)
CC and fibroblast cell growth factor (FGF) fragments which were used in
CC the production of fusion polypeptides which are able to stimulate
CC cell adhesion and cell growth. These fusion peptides may be used
XX for anti-aging cosmetics and in wound healing after surgery.
XX
XX Sequence 155 AA:

```


Db 1 maagsittlpa|pedgsgsafppghfkdpkrl|ycknggffll|hpdgrvdyreksdphl 60
 QY 61 KILOAEEGCVVSIGVCANRYLAMKEDGRLASKCVTDECFEPFERLESNNNTYRSRY 120
 Db 61 k|q|gaeeergvvsikgvcanylamkedgrllaskcvtdceffferlesnnytyrsky 120
 QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

RESULT 8

AA070823
 ID AAR70823 standard; protein; 155 AA.

AC AAR70823;

DT 01-SEP-1995 (first entry)

DE FGF-2.

KW FGF-2; fibroblast growth factor; cytotoxic conjugate; fusion protein; saporin; cytostatic; tumor; diabetes; rheumatoid arthritis.

OS Homo sapiens.

PN W0503831-A.

PD 09-FEB-1995.

PF 27-JUL-1994; 94WO-US08511.

PR 02-AUG-1993; 93US-0099924.

PR 29-OCT-1993; 93US-0145829.

PA (PRIZ-) PRIZM PHARM INC.

PA (WHTT-) WHITTIER INST DIABETES & ENDOCRINOLOGY.

PI Baird AJ, Lappl DA, Sosnowski BA;

DR WPI: 1995-082038/11.

PT New monogenous preparations of cytotoxic conjugates and DNA -
 PT contain fibroblast growth factors and cytotoxic agents for
 PT treating FGF conditions such as tumours, diabetes and rheumatoid
 PT arthritis.

PS Disclosure: Page 109-110; 128pp; English.

CC Novel fusion proteins comprise FGF linked to saporin. FGF-1 to -9

CC may be used, pref. mutants in which at least 1 Cys residue is

CC replaced by conservative Ser substitutions. The fusion proteins

CC are potent cytotoxic agents to cells bearing the FGF receptor.

XX Sequence 155 AA;

Query Match 100.0%; Score 826; DB 16; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2.9e-80;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITTLPA|PEDGSGSAPPGHFKDPKRL|YCKNGGFFLRIHPDGRVGYREKSDPHI 60
 Db 1 maagsittlpa|pedgsgsafppghfkdpkrl|ycknggffll|hpdgrvdyreksdphl 60

QY 61 KILOAEEGCVVSIGVCANRYLAMKEDGRLASKCVTDECFEPFERLESNNNTYRSRY 120
 Db 61 k|q|gaeeergvvsikgvcanylamkedgrllaskcvtdceffferlesnnytyrsky 120

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

RESULT 9

AAW33338
 ID AAW33338 standard; protein; 155 AA.

AC AAW33338;

DT 23-FEB-1998 (first entry)

DE Human fibronectin amino-terminal oligopeptide.

KW Amino-terminal; human fibronectin; target cell;

KW transfection; retroviral vector; gene therapy; cancer;

KW viral disease; acquired immunodeficiency syndrome; AIDS.

OS Homo sapiens.

PN W09718318-A1.

PD 22-MAY-1997.

PF 07-NOV-1996; 96WO-JP03254.

PR 08-MAR-1996; 96JP-0051847.

PR 13-NOV-1995; 95JP-0294382.

PA (TAKI) TAKARA SHUZO CO LTD.

PI Asada K, Hashino K, Kato I, Koyama N, Uemori T;

PI Ueno T;

DR WPI: 1997-289294/26.

PT Method for increasing efficacy of gene transfer to target cell using

PT retrovirus - by infection of the target cell in the presence of a

PT substance which binds to the virus and a substance which binds to

PT the target cell

PS Claim 41; Pages 93-94; 194pp; Japanese.

CC The present sequence is a human fibronectin amino-terminal

CC oligopeptide, which was used in the development of a novel method

CC for increasing the efficiency of gene introduction into a target

CC cell using a retroviral vector. The method comprises carrying out

CC viral infection of the target cell in the presence of a retrovirus

CC and target cell binding substance or substances. The method can be

CC used to effectively introduce genes into target cells for the gene

CC therapy of cancer and viral diseases, e.g. AIDS.

XX Sequence 155 AA;

Query Match 100.0%; Score 826; DB 18; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2.9e-80;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITTLPA|PEDGSGSAPPGHFKDPKRL|YCKNGGFFLRIHPDGRVGYREKSDPHI 60
 Db 1 maagsittlpa|pedgsgsafppghfkdpkrl|ycknggffll|hpdgrvdyreksdphl 60

QY 61 KILOAEEGCVVSIGVCANRYLAMKEDGRLASKCVTDECFEPFERLESNNNTYRSRY 120
 Db 61 k|q|gaeeergvvsikgvcanylamkedgrllaskcvtdceffferlesnnytyrsky 120

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 Db 121 tsmyvalkrtggyk|lgsctgpgkall|flpmsaks 155

bFGF; mutlein; protein engineering; heparin; thrombosis; thrombocytopenia; ophthalmic disorder; human; therapy.

OS Homo sapiens.

PH Key Location/Qualifiers

FT Peptide 1..9 /label= Sig_peptide

FT Protein /note= "amino acid residues -9 to -1"

FT /label= Mat_protein

FT /note= "amino acid residues +1 to +145"

FT Misc-difference 95 /note= "Phe-95 is replaced by another amino acid (Claim 3), preferably Ala, Phe, Ser, Gly, Met, Leu or Tyr, especially Ala, Gly or Ser"

FT Misc-difference 96 /note= "Glu-96 may be replaced by another amino acid (Claim 7), preferably Ala, Gly or Ser"

FT Misc-difference 101 /note= "Asn-101 may be replaced by another amino acid (Claim 2), preferably Ala, Phe, Ser, Gly, Met, Leu or Tyr, especially Ala, Gly or Ser"

FT Misc-difference 104 /note= "Asn-104 may be replaced by another amino acid (Claim 1), preferably Ala, Phe, Ser, Gly, Met, Leu or Tyr, especially Ala, Gly or Ser"

PN WO9839436-A2.

PD 11-SEP-1998.

PP 03-MAR-1998; 98WO-JP00878.

PR 03-MAR-1997; 97US-0040785.

PA (EISA) EISAI CO LTD.

PI Kalyanaraman R, Kawai T, Zhu H;

DR WPI: 1998-495843/42.

DR N-PSDB: AAV47647.

XX Fibroblast growth factor mutlein and DNA - having reduced receptor binding and able to bind heparin, useful for treating and regulating heparin-related disorders e.g. thrombosis

PT Disclosure: Page 53; 71pp; English.

PS This is the amino acid sequence of fibroblast growth factor-2 (FGF-2), or basic fibroblast growth factor (bFGF). Claimed DNA molecules of the invention encode FGF mutlein polypeptides (see AAW5711-20) that show reduced FGF receptor binding activity but which retain the ability to bind heparin. For FGF-2, amino acid residues 95, 101 or 104 are preferably replaced by other amino acid residues, with an optional further replacement of the Glu-96 residue. The mutlein may be further modified by replacement of the Cys-78 and Cys-96 residues to reduce aggregation. The mutlein is obtained by site-specific or site-directed mutagenesis of FGF-2 DNA, incorporation of the mutated DNA into a vector and expression in host cells. The FGF mutleins are used to treat heparin-related disorders, such as excessive bleeding induced by heparin, ophthalmic disorders and heparin-associated thrombocytopenia and thrombosis. They may also be used for drug design, especially FGF-2 antagonists.

SO Sequence 155 AA;

Query Match

100.0%; Score 826; DB 19; Length 155;

Best Local Similarity 100.0%; Pred. No. 2.9e-80;

Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 MAAGSTTLPALPEDGSGAFPGRGHKDKPKRLYCKNGSGFELRHPPGRDVGREKSDPHI 60

DB 1 maagsltlpalpedgsgsfppghkdkpkrlyckngsgfllrhpgrdvgrvrsdphl 60

OY 61 KIQLQAEERGVVSIKVCANRYLAMKEDRLASKVCTECFEFLSESNNTYRSRY 120

DB 61 kqlqaeergvvsikgvcanrylamkedgrrllaskvctecffferlesnnytyrstry 120

OY 121 TSWYVALKRTGQYKLGSKTGPCGKAILFLPMSAKS 155

DB 121 tswyvalkrtgqyklgsktgpqkailflpmsaks 155

RESULT 13

AAW71379

ID AAW71379 standard; Protein; 155 AA.

XX AC AAW71379;

XX DT 04-DEC-1998 (first entry)

XX DE 18 kDa form of fibroblast growth factor-2 (FGF-2).

XX FGF-2; leaderless protein; inhibition; export; angiogenesis; restenosis; treatment; tumour; inflammation; cell proliferation; diabetes; retinopathy; infection; polycystic kidney disease; atherosclerosis.

OS Homo sapiens.

OS WO9837880-A1.

PN 03-SEP-1998.

PD 25-FEB-1998; 98WO-US03689.

PF 26-FEB-1997; 97US-0807014.

PR (CIBL-) CIBLEX CORP.

PA Baird A, Florjanczyk R;

PI WPI: 1998-495377/42.

DR N-PSDB: AAV60340.

XX Inhibiting export of leaderless protein with agent that inhibits binding to transporter protein - especially for treating angiogenesis and restenosis by preventing export of fibroblast growth factor, also methods for identifying leaderless proteins and their transporters

PT Claim 2; Pages 55-56; 116pp; English.

PS The present sequence represents 18 kDa form of fibroblast growth factor-2 (FGF-2), a leaderless protein. A leaderless protein refers to a protein that is found in an extracellular environment, but lacks a canonical leader sequence. The specification describes a method for inhibiting export of a leaderless protein from a cell. The method comprises treating the cell with an agent that inhibits binding between the leaderless protein and a transport molecule. Treatment with the inhibiting agent is specifically used to treat angiogenesis and restenosis, i.e. where expression of FGF-2 is inhibited, and the agent is applied to endothelial or smooth muscle cells. Other applications are treatment of tumours (melanoma, teratocarcinoma, ovarian carcinoma, bladder cancer and CC neuroblastoma), inflammation, cell proliferation, complications of CC diabetes (e.g. retinopathy), viral, bacterial or fungal infections, CC polycystic kidney disease and atherosclerosis.

XX Sequence 155 AA;


```
OY 61 KLOQAERGVSIGVCANRYLAMKEDGRILASKCVTDECFFERLESNNNTYRSRY 120
    |||||||
Db 61 klggeergvsvikgvcanylamkedgrllaskcvldecfferlesnnyntyrsky 120
    |||||||
OY 121 TSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
    |||||||
Db 121 tswyvalkrtgqyklgsktgpqkailflpmsaks 155
    |||||||
```

Search completed: June 7, 2002, 14:35:40
Job time: 277 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:37:15 ; Search time 47.03 Seconds

(Without alignments)
316.688 Million cell updates/sec

Title: US-09-802-365-8

Perfect score: 826
Sequence: 1 MAAGSITLPALEPDGSGA.....GSKTGPCKAILFLPMASKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283138 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :
1: p1r1:*
2: p1r2:*
3: p1r3:*
4: p1r4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	826	100.0	210	A32398	basic fibroblast g
2	817	98.9	157	GKBOB	basic fibroblast g
3	798.5	96.7	154	A31674	basic fibroblast g
4	783.5	94.9	134	C37360	basic fibroblast g
5	770	93.2	146	S00185	basic fibroblast g
6	760.5	92.1	164	S31622	basic fibroblast g
7	759	91.9	189	A48834	basic fibroblast g
8	738	89.3	137	I46711	fibroblast growth
9	687	83.2	155	A40117	basic fibroblast g
10	468.5	56.7	125	A32484	basic fibroblast g
11	418.5	50.7	155	A60721	acidic fibroblast
12	410.5	49.7	155	A60130	acidic fibroblast
13	409.5	49.6	155	A33665	acidic fibroblast
14	404.5	49.0	155	S04147	acidic fibroblast
15	404.5	49.0	155	D37360	acidic fibroblast
16	403.5	48.8	152	JH0476	acidic fibroblast
17	395.5	47.9	155	JW0055	acidic fibroblast
18	393.5	47.6	155	GKBOA	acidic fibroblast
19	265	32.1	194	I50710	fibroblast growth
20	255.5	30.9	206	1 TVHNS	fibroblast growth
21	253	30.6	256	JC4627	fibroblast growth
22	251	30.4	220	I50588	fibroblast growth
23	250	30.3	208	S14192	fibroblast growth
24	249	30.1	208	S20102	fibroblast growth
25	247.5	29.4	206	JC4268	fibroblast growth
26	242.5	29.4	264	A36207	fibroblast growth
27	242.5	29.4	266	S68144	fibroblast growth
28	241.5	29.2	202	1 TVHNS	fibroblast growth
29	239	28.9	187	S23595	embryonic fibroblast

30	237.5	28.8	237	1	S39582	transforming prote
31	237	28.7	245	1	TVMST2	transforming prote
32	236	28.6	239	1	S04742	fibroblast growth
33	234.5	28.4	192	2	S54407	embryonic fibroblast
34	233	28.2	267	1	TVHUF5	fibroblast growth
35	217	26.3	208	2	S64486	fibroblast growth
36	217	26.3	208	2	A48137	fibroblast growth
37	210	25.4	211	2	JC7353	fibroblast growth
38	209.5	25.4	194	2	I48610	keratinocyte growth
39	208	25.2	208	2	JC7082	fibroblast growth
40	207.5	25.1	194	1	A36301	fibroblast growth
41	207.5	25.1	194	2	S26049	fibroblast growth
42	207.5	25.1	194	2	S49501	keratinocyte growth
43	206.5	25.0	207	2	JC5940	fibroblast growth
44	205.5	24.9	207	2	JC5941	fibroblast growth
45	204	24.7	212	2	JC7511	fibroblast growth

ALIGNMENTS

RESULT 1
A32398
basic fibroblast growth factor precursor, 22.5K form - human
N:Alternate names: bFGF; fibroblast growth factor 2; prostatic growth factor; prostatic
N:Contents: basic fibroblast growth factor, 18K form
C:Species: Homo sapiens (man)
C>Date: 31-Jul-1989 #sequence_revision 31-Dec-1993 #text_change 21-Jul-2000
C:Accession: A32398; A61537; A26642; B32878; S00297; A54316; B54316; A33624; A25824;
R:Prats, H.; Kagnad, M.; Prats, A.C.; Klagsbrun, M.; Lelias, J.M.; Lilaun, P.; Chalo
Proc. Natl. Acad. Sci. U.S.A. 86, 1836-1840, 1989
A:Title: High molecular mass forms of basic fibroblast growth factor are initiated by
A:Reference number: A32398; MUID:89164522
A:Accession: A32398
A:Molecule type: mRNA
A:Residues: 1-210 <PRA>
A:Cross-references: GB:J04513; NID:g183083; PIDN:AA52531.1; PID:g459811
R:Shibata, F.; Balrd, A.; Florjanczyk, R.Z.
Growth Factors 4, 277-287, 1991
A:Title: Functional characterization of the human basic fibroblast growth factor gene
A:Reference number: A61537; MUID:92110035
A:Accession: A61537
A:Molecule type: DNA
A:Residues: 1-114 <SHI>
A:Note: authors translated the codon GGA for residue 47 as Ala
R:Kurokawa, T.; Sasada, R.; Iwane, M.; Igarashi, K.
FEBS Lett. 213, 189-194, 1987
A:Title: Cloning and expression of cDNA encoding human basic fibroblast growth factor
A:Reference number: A26642; MUID:87162468
A:Accession: A26642
A:Molecule type: mRNA
A:Residues: 56-210 <KUR>
A:Cross-references: GB:M27968; NID:g182562; PIDN:AA52448.1; PID:g182563
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Merz, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-666, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organization
A:Reference number: A90924; MUID:87217066
A:Accession: B32878
A:Molecule type: mRNA
A:Residues: 56-210 <ABR>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Merz, A.; Friedman, J.; Gospodarowicz, D.
EMBO J. 5, 2523-2528, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence and genomic organization
A:Reference number: S00297; MUID:8705817
A:Accession: S00297
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <AB2>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Shimoyama, Y.; Gotoh, M.; Ino, Y.; Sakamoto, M.; Kato, K.; Hirohashi, S.
Jpn. J. Cancer Res. 82, 1265-1270, 1991
A:Title: Characterization of high-molecular-mass forms of basic fibroblast growth fac

iclnogenesis.
A:Reference number: A54316; MUID:92091228
A:Accession: A54316
A:Molecule type: protein
A:Residues: 'xx',86-88,'x',90-91,'x',93-95 <SH3>
A:Experimental source: C-121 hepatocellular carcinoma cell line
A>Note: sequence extracted from NCBI Backbone (NCBI:71595)
A:Accession: B54316
A:Molecule type: protein
A:Residues: 'xxx',19,'x',21-29 <SH2>
A>Note: sequence extracted from NCBI Backbone (NCBI:71594)
R:Feige, J.T.; Bradley, J.D.; Fryburg, K.; Farris, J.; Couzens, L.C.; Barr, P.J.; Baird, J. Cell Biol. 109, 3105-3114, 1989
A:Title: Differential effects of heparin, fibronectin, and laminin on the phosphorylation of tyrosine
A:Reference number: A33624; MUID:90078343
A:Accession: A33624
A:Status: preliminary
A:Molecule type: protein
A:Residues: 57-210 <FEI>
R:Story, M.T.; Esch, F.; Shimasaki, S.; Sasse, J.; Jacobs, S.C.; Lawson, R.K.
Biochem. Biophys. Res. Commun. 142, 702-709, 1987
A:Title: Amino-terminal sequence of a large form of basic fibroblast growth factor isoform 1
A:Reference number: A25824; MUID:87156686
A:Accession: A25824
A:Molecule type: protein
A:Residues: 57-77 <STO>
A:Experimental source: prostate
R:Gimenez-Gallardo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 135, 541-548, 1986
A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino terminal
A:Reference number: A50122; MUID:86186784
A:Accession: B24243
A:Molecule type: protein
A:Residues: 65-102,'x',104-105 <GIM>
A:Experimental source: brain
R:Gautschi, P.; Frazer-Schroder, M.; Bohlen, P.
FEBS Lett. 204, 203-207, 1986
A:Title: Partial molecular characterization of endothelial cell mitogens from human brain
A:Reference number: A91364; MUID:86275260
A:Accession: B24301
A:Molecule type: protein
A:Residues: 65-88,'x',90-98,'x',100 <GAM>
R:Sommer, A.; Brewer, M.T.; Thompson, R.C.; Moscatelli, D.; Presta, M.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 144, 543-550, 1987
A:Title: A form of human basic fibroblast growth factor with an extended amino terminus.
A:Reference number: S42242; MUID:87213238
A:Accession: S42242
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 54-210 <SOM>
A:Cross-references: EMBL:M17599; NID:q183086; PIDN:AAA52534.1; PID:q183087
R:Pateliano, M.W.; Horlick, R.A.; Springer, B.A.; Van Dyk, D.E.; Tobey, T.; Wetmore, D.
Biochem. Biophys. Res. Commun. 1994
A:Title: Multivalent ligand-receptor binding interactions in the fibroblast growth factor family
A:Reference number: A55784; MUID:94347757
A:Accession: B53784
A:Molecule type: protein
A:Residues: 54-71 <PAN>
R:Watson, R.; Anthony, F.; Pickett, M.; Lambden, P.; Masson, G.M.; Thomas, E.J.
Biochem. Biophys. Res. Commun. 187, 1227-1231, 1992
A:Title: Reverse transcription with nested polymerase chain reaction shows expression of hFGF-1 in human placenta
A:Reference number: I52267; MUID:93038590
A:Accession: I52267
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 95-182 <RES>
A:Cross-references: GB:S47380; NID:q256535; PIDN:AD13853.1; PID:q4261553
R:Parry, V.; Bugler, B.; Amaral, F.; Prome, J.C.; Prats, H.
FEBS Lett. 349, 23-28, 1994
A:Title: Purification and characterization of the 210-amino acid recombinant basic fibroblast growth factor (bFGF) from human placenta
A:Reference number: S46253; MUID:94320639

A:Accession: S46253
A:Molecule type: protein
A:Residues: 39-53;65-88 <PAT>
A>Note: recombinant gene expressed in Escherichia coli
A:Genetics:
A:Gene: GDB:FGF2; FGF2
A:Cross-references: GDB:119910; OMIM:134920
A:Map position: 4q25-4q27
A:Start codon: CTG
C:Superfamily: fibroblast growth factor
C:Keywords: alternative initiators; angiogenesis; growth factor; heparin binding; mlt
F:1210/Product: basic fibroblast growth factor, 22.5k form #status predicted <MA2>
F:65-210/Product: basic fibroblast growth factor, 18k form #status predicted <MA2>
F:82-86/Region: heparin binding #status predicted
F:171-174/Region: heparin binding #status predicted

Query Match 100.0%; Score 826; DB 2; Length 210;
Best Local Similarity 100.0%; Pred. No. 4,1e-74;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 MAAGSITTLPAEPDGGGAPPGHFKDPKRLYCKNGGFLLRHPDGVREKSDPHI 60
|||||
Db 56 MAAGSITTLPAEPDGGGAPPGHFKDPKRLYCKNGGFLLRHPDGVREKSDPHI 115
|||||
Qy 61 KIQQAEEGRGVYSIKGVANRYLANKEDGRLLASCVTDECFEERLESNNYTRSRKY 120
|||||
Db 116 KIQQAEEGRGVYSIKGVANRYLANKEDGRLLASCVTDECFEERLESNNYTRSRKY 175
|||||
Qy 121 TSWYVALKRTGQYKLGSKTGPQKALFLPMSAKS 155
|||||
Db 176 TSWYVALKRTGQYKLGSKTGPQKALFLPMSAKS 210
|||||

RESULT 2
CKBOB
basic fibroblast growth factor precursor - bovine (fragment)
N:Alternate names: bFGF; kidney-derived growth factor; prostaltropin
C:Species: Bos primigenius taurus (cattle)
C:Date: 13-Aug-1986 #sequence revision 02-Jun-1995 #text change 24-Nov-1999
C:Accession: A24663; A32878; A33784; A61550; A61551; A60310; A601366; A60316;
R:Abraham, J.A.; Mergia, A.; Whang, J.L.; Tumbolo, A.; Friedman, J.; Hjertild, K.A.; G
Science 233, 545-548, 1986
A:Title: Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic
A:Reference number: A94290; MUID:86261806
A:Accession: A24663
A:Molecule type: mRNA
A:Residues: 3-157 <ABR>
A:Cross-references: GB:M13440; NID:q163049; PIDN:AAA30518.1; PID:q163050
A:Experimental source: pituitary gland
R:Abraham, J.A.; Whang, J.L.; Tumbolo, A.; Mergia, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organization
A:Reference number: A90924; MUID:87217066
A:Accession: A32878
A:Molecule type: mRNA
A:Residues: 3-157 <AB2>
R:Miller, P.G.; Li, Y.S.; Hoffman, R.M.; Kodner, C.M.; Siegel, N.R.; Deuel, T.F.
Biochem. Biophys. Res. Commun. 165, 1096-1103, 1989
A:Title: A novel 17 kd heparin-binding growth factor (HBGF-8) in bovine uterus: purif
A:Reference number: A33784; MUID:90121211
A:Accession: A33784
A:Molecule type: protein
A:Residues: 1-14 <MLD>
A>Note: demonstration of a possible alternative initiator or splice junction
R:Bertolini, J.; Hearn, M.T.W. 1987
Mol. Cell. Endocrinol. 51, 187-199, 1987
A:Title: Isolation, characterization and tissue localisation of an N-terminal-truncat
A:Reference number: A61550; MUID:87247652
A:Accession: A61550
A:Molecule type: protein
A:Residues: 16-35 <BER>
R:ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.

Mol. Cell. Endocrinol. 49, 189-194, 1987
 A>Title: Isolation and partial characterization of basic fibroblast growth factor from h
 A:Reference number: A61551; MUID:87162856
 A:Accession: A61551
 A:Molecule type: protein
 A:Residues: 27-35, 'X', 37-41 <UE3>
 A:Experimental source: testes
 A>Note: This form appears to be identical to the renal form
 R:Ueno, N.; Baird, A.; Esch, F.; Shimazaki, S.; Ling, N.; Guillemin, R.
 Regul. Pept. 16, 135-145, 1986
 A>Title: Purification and partial characterization of a mitogenic factor from bovine liv
 A:Reference number: A60310; MUID:87119165
 A:Accession: A60310
 A:Molecule type: protein
 A:Residues: 23-35, 'X', 37-42 <UEN>
 A:Experimental source: liver
 R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
 Biochem. Biophys. Res. Commun. 138, 580-588, 1986
 A>Title: Isolation of an amino terminal extended form of basic fibroblast growth factor.
 A:Reference number: A24819; MUID:86295737
 A:Contents: annotation
 A>Note: the amino end of this form was blocked: the peptide composition matched what was
 R:Gospodarowicz, D.; Baird, A.; Cheng, J.; Lul, G.M.; Esch, F.; Bohlen, P.
 Endocrinology 118, 82-90, 1986
 A>Title: Isolation of fibroblast growth factor from bovine adrenal gland: physicochemica
 A:Reference number: A61094; MUID:86081530
 A:Accession: A61094
 A:Molecule type: protein
 A:Residues: 12-25, 27-35, 'X', 37-40 <GOS>
 A:Experimental source: adrenal gland
 R:Esch, F.; Baird, A.; Ling, N.; Ueno, N.; Hall, F.; Denoroy, L.; Klepper, R.; Gospodarc
 Proc. Natl. Acad. Sci. U.S.A. 82, 6507-6511, 1985
 A>Title: Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and
 A:Reference number: A01386; MUID:86016731
 A:Accession: A01386
 A:Molecule type: protein
 A:Residues: 12-157 <ESCO>
 A:Experimental source: pituitary gland
 R:Baird, A.; Esch, F.; Bohlen, P.; Ling, N.; Gospodarowicz, D.
 Regul. Pept. 12, 201-213, 1985
 A>Title: Isolation and partial characterization of an endothelial cell growth factor fro
 A:Reference number: A60316; MUID:86093426
 A:Accession: A60316
 A:Molecule type: protein
 A:Residues: 27-35, 'X', 37-43 <BAI>
 A:Experimental source: kidney
 R:Bohlen, P.; Baird, A.; Esch, F.; Ling, N.; Gospodarowicz, D.
 Proc. Natl. Acad. Sci. U.S.A. 81, 5364-5368, 1984
 A>Title: Isolation and partial molecular characterization of pituitary fibroblast growth
 A:Reference number: A22054; MUID:84298139
 A:Accession: A22054
 A:Molecule type: protein
 A:Residues: 12-26 <BOH>
 C:Comment: The acidic and basic fibroblast growth factors are the major endothelial-cell
 cell types in vitro (although bFGF is 30-100 times more potent than aFGF in stimulating t
 C:Comment: This protein binds heparin more strongly than does aFGF.
 C:Keywords: fibroblast growth factor
 C:Keywords: alternative splicing; angiogenesis; blocked amino end; growth factor; hepari
 F:1-157/Product: basic fibroblast growth factor, uterine form #status predicted <MAIT>
 F:4-157/Product: basic fibroblast growth factor, pituitary gamma form #status experiment
 F:12-157/Product: basic fibroblast growth factor, pituitary alpha form #status experiment
 F:16-157/Product: basic fibroblast growth factor, pituitary short form #status predicted
 F:23-157/Product: basic fibroblast growth factor, hepatic form #status experimental <MAT
 F:27-157/Product: basic fibroblast growth factor, renal form #status experimental <MAT
 F:29-33, 118-121/Region: heparin binding #status predicted
 F:4/Modified site: blocked amino end (Ala) (in mature form pituitary gamma) (probably ac

Query Match 98.9%; Score 817; DB 1; Length 157;
 Best Local Similarity 98.7%; Pred. No. 2, 3e-73;
 Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;
 QY 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCKNGGFLRIHPDGRVDGVRKSDPHI 60

|||||
 Db 3 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCKNGGFLRIHPDGRVDGVRKSDPHI 62
 QY 61 KIQLOAEERGVSVISGVCANRILAMKEDGRLLASVCYDECFEFLRSNNNTYRSRY 120
 Db 63 KIQLOAEERGVSVISGVCANRILAMKEDGRLLASVCYDECFEFLRSNNNTYRSRY 122
 QY 121 TSMYVALKRTGYKIGSKTGPCKAIFLPLMSAKS 155
 Db 123 TSMYVALKRTGYKIGSKTGPCKAIFLPLMSAKS 157

RESULT 3
 basic fibroblast growth factor precursor - rat
 A:Accession: A31674
 A:Residues: 1-154 <SHI>
 A:Cross-references: GB:M22427; NID:g204285; PIDN:AAA41210.1; PID:g204286
 R:Kurokawa, T.; Seno, M.; Igarashi, K.
 Nucleic Acids Res. 16, 5201, 1988
 A>Title: Nucleotide sequence of rat basic fibroblast growth factor cDNA.
 A:Reference number: S00876; MUID:88262516
 A:Accession: S00876
 A:Molecule type: mRNA
 A:Residues: 1-154 <KUR>
 A:Cross-references: EMBL:X07285; NID:g56203; PIDN:CAA30265.1; PID:g56204
 R:El-Husseini, A.E.D.; Paterson, J.A.; Wyal, Y.; Shu, R.P.C.
 Biochim. Biophys. Acta 1131, 314-316, 1992
 A>Title: PCR detection of the rat brain basic fibroblast growth factor (bFGF) mRNA co
 A:Reference number: S24309; MUID:92329546
 A:Accession: S24309
 A>Status: preliminary; translation not shown
 A:Molecule type: mRNA
 A:Residues: 35-154 <ELH>
 A:Cross-references: EMBL:X61697; NID:g56143; PIDN:CAA43863.1; PID:g56144
 C:Superfamily: fibroblast growth factor
 C:Keywords: growth factor
 F:1-9/Domain: signal sequence #status predicted <SIG>
 F:10-154/Product: basic fibroblast growth factor #status predicted <MAT>
 Query Match 96.7%; Score 798.5; DB 2; Length 154;
 Best Local Similarity 96.8%; Pred. No. 1, 5e-71;
 Matches 150; Conservative 4; Mismatches 0; Indels 1; Gaps 1;
 QY 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCKNGGFLRIHPDGRVDGVRKSDPHI 60
 Db 1 MAAGSITSLPALPEDGSGAFPFGHFKDKRLCKNGGFLRIHPDGRVDGVRKSDPHV 59
 QY 61 KIQLOAEERGVSVISGVCANRILAMKEDGRLLASVCYDECFEFLRSNNNTYRSRY 120
 Db 60 KIQLOAEERGVSVISGVCANRILAMKEDGRLLASVCYDECFEFLRSNNNTYRSRY 119
 QY 121 TSMYVALKRTGYKIGSKTGPCKAIFLPLMSAKS 155
 Db 120 TSMYVALKRTGYKIGSKTGPCKAIFLPLMSAKS 154

RESULT 4
 basic fibroblast growth factor - mouse
 C:Species: Mus musculus (house mouse)
 C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999
 C:Accession: C37360

RESULT 8
146711
fibroblast growth factor - rabbit (fragment)
C:Species: Oryctolagus cuniculus (domestic rabbit)
C:Date: 14-Feb-1997 #sequence_revision 14-Feb-1997 #text_change 16-Jul-1999
C:Accession: 146711
R:Winkles, J.A.; Friesel, R.; Alberts, G.F.; Janat, M.F.; Lian, G.
Am. J. Pathol. 143, 518-527, 1993
A:Title: Elevated expression of basic fibroblast growth factor in an immortalized rabbit
A:Reference number: 146711; MUID:93343209
A:Accession: 146711
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 1-137 <MIN>
A:Cross-references: GB:112034; NID:9165014; PID:AAA31248.1; PID:9165015
C:Superfamily: fibroblast growth factor

Query Match 89.3%; Score 738; DB 2; Length 137;
Best Local Similarity 99.3%; Pred. No. 1.2e-65;
Matches 136; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 10 PALPEDGSGAPPGHFKPKRKYCKNGGFLRIHPDGRVDGVRKSDPHIKLOAER 69
|||||
DB 1 PALPEDGSGAPPGHFKPKRKYCKNGGFLRIHPDGRVDGVRKSDPHIKLOAER 60
QY 70 GVSIVKGCANRYLAMKEDGRLLASCKVTCDECFEERLESNNYNTYRSRYTSMYALKR 129
|||||
DB 61 GVSIVKGCANRYLAMKEDGRLLASCKVTCDECFEERLESNNYNTYRSRYTSMYALKR 120
QY 130 TGOYKLGSKTGPQKAI 146
|||||
DB 121 TGOYKLGSKTGPQKAI 137

RESULT 9
A40117
basic fibroblast growth factor - African clawed frog
C:Species: Xenopus laevis (African clawed frog)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A40117; A29618
R:Kimmelman, D.; Abraham, J.A.; Haaparanta, T.; Palisi, T.M.; Kirschner, M.W.
Science 242, 1053-1056, 1988
A:Title: The presence of fibroblast growth factor in the frog egg: its role as a natural
A:Reference number: A40117; MUID:89058621
A:Accession: A40117
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-135 <KIM>
A:Cross-references: GB:M18067; NID:9214177; PID:AAA49726.1; PID:9214178; GB:M21092
R:Kimmelman, D.; Kirschner, M.
Cell 51, 869-877, 1987
A:Title: Synergistic induction of mesoderm by FGF and TGF-beta and the identification of
A:Reference number: A29618; MUID:88052890
A:Accession: A29618
A:Molecule type: mRNA
A:Residues: 95-110, 112-155 <RI2>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor

Query Match 83.2%; Score 687; DB 1; Length 155;
Best Local Similarity 83.9%; Pred. No. 1.5e-60;
Matches 130; Conservative 9; Mismatches 16; Indels 0; Gaps 0;

QY 1 MAAGSTTTPALPEDGSGAPPGHFKPKRKYCKNGGFLRIHPDGRVDGVRKSDPHI 60
|||||
DB 1 MAAGSTTTPALPEDGSGAPPGHFKPKRKYCKNGGFLRIHPDGRVDGVRKSDPHI 60
QY 61 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASCKVTCDECFEERLESNNYNTYRSRY 120
|||||
DB 61 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASCKVTCDECFEERLESNNYNTYRSRY 120

QY 121 TSMYVALKRTGQYKLGSKTGPQKAILFLPMASAKS 155
:|||||
DB 121 TSMYVALKRTGQYKLGSKTGPQKAILFLPMASAKS 155

RESULT 10
A32484
basic fibroblast growth factor precursor, 25k - guinea pig (fragments)
C:Species: Cavia porcellus (guinea pig)
C:Date: 20-Oct-1989 #sequence_revision 20-Oct-1989 #text_change 15-Jun-1996
C:Accession: A32484
R:Sommer, A.; Moscatelli, D.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 160, 1267-1274, 1989
A:Title: An amino-terminally extended and post-translationally modified form of a 25k
A:Reference number: A32484; MUID:89273588
A:Accession: A32484
A:Status: preliminary; nucleic acid sequence not shown; not compared with conceptual
A:Molecule type: mRNA
A:Residues: 1-125 <SOM>
C:Superfamily: fibroblast growth factor

Query Match 56.7%; Score 468.5; DB 2; Length 125;
Best Local Similarity 63.2%; Pred. No. 4.5e-39;
Matches 98; Conservative 2; Mismatches 4; Indels 51; Gaps 3;

QY 1 MAAGSTTTPALPEDGSGAPPGHFKPKRKYCKNGGFLRIHPDGRVDGVRKSDPHI 60
|||||
DB 22 MAAGSTTTPALPEDGSGAPPGHFKPKRKYCKNGGFLRIHPDGRVDGVRKSDPHI 57
QY 61 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASCKVTCDECFEERLESNNYNTYRSRY 120
|||||
DB 58 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASCKVTCDECFEERLESNNYNTYRSRY 90
QY 121 TSMYVALKRTGQYKLGSKTGPQKAILFLPMASAKS 155
:|||||
DB 91 TSMYVALKRTGQYKLGSKTGPQKAILFLPMASAKS 125

RESULT 11
A60721
acidic fibroblast growth factor - golden hamster
N:Alternate names: heparin-binding growth factor 1
C:Species: Mesocricetus auratus (golden hamster)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A60721
R:Hall, J.A.; Harris, M.A.; Malark, M.; Mansson, P.E.; Zhou, H.; Harris, S.E.
J. Cell. Biochem. 43, 17-26, 1990
A:Title: Characterization of the hamster DDT-1 cell aFGF/HGBF-1 gene and cDNA and its
A:Reference number: A60721; MUID:90270291
A:Accession: A60721
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-135 <HAL>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding

Query Match 50.7%; Score 418.5; DB 1; Length 155;
Best Local Similarity 54.8%; Pred. No. 5e-34;
Matches 86; Conservative 16; Mismatches 50; Indels 5; Gaps 2;

QY 1 MAAGSTTTPALPEDGSGAPPGHFKPKRKYCKNGGFLRIHPDGRVDGVRKSDPHI 60
|||||
DB 1 MAAGSTTTPALPEDGSGAPPGHFKPKRKYCKNGGFLRIHPDGRVDGVRKSDPHI 57
QY 61 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASCKVTCDECFEERLESNNYNTYRSRY 120
|||||
DB 58 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASCKVTCDECFEERLESNNYNTYRSRY 117
QY 121 TSMYVALKRTGQYKLGSKTGPQKAILFLPMASAKS 155
:|||||
DB 118 AERNMFVGLKNGSKRGPRTHYGOKAILFLPLPVSS 154

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RESULT 12
A60130
acidic fibroblast growth factor - chicken
M:Alternate names: endothelial cell growth factor
C:Species: Gallus gallus (chicken)
C:Date: 03-Mar-1993 #sequence_revision 03-Mar-1993 #text_change 16-Jul-1999
C:Accession: A60130; S02639
R:Schnerch, H.; Risau, W.
Development 111, 1143-1154, 1991
A:Title: Differentiating and mature neurons express the acidic fibroblast growth factor
A:Reference number: A60130; MUID:91347925
A:Accession: A60130
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <SCH>
A:Cross-references: GB:S63263; NID:9234372; PID:AA619629.1; PID:9234373
R:Risau, W.; Gautschi-Sova, P.; Boehlen, P.
EMBO J. 7, 959-962, 1988
A:Title: Endothelial cell growth factors in embryonic and adult chick brain are related
A:Reference number: S02639; MUID:88296438
A:Accession: S02639
A:Molecule type: protein
A:Residues: 22-30, 'X', 32-44, 'X', 46-48 <RIS>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor

Query Match 49.7%; Score 410.5; DB 2; Length 155;
Best Local Similarity 54.9%; Pred. No. 3.1e-33;
Matches 84; Conservative 20; Mismatches 44; Indels 5; Gaps 2;

OY 1 MAAGSTTTTALPEDGSGAFPPGHPKPRKLYCKNGGFLRHPGKRVGVREKSDPHI 60
    ||||| ||| | | | | | | | | | | | | | | | | | | | | | | |
DB 1 MAGEITTTALTFRG---LPIGNKKRKLKLYCSNGGFLRILPCKGKDTFRDSDQHI 57
    ||||| ||| | | | | | | | | | | | | | | | | | | | | | |
OY 61 KIQQAERGQVSVISIKVCANRYIAMKEDRLLASKCVTDECFEERLESNNNTYRSRY 120
    :||| ||| | | | | | | | | | | | | | | | | | | | | | |
DB 58 QQLSADVEGEVYIKSTASGQYLAMDTNGLYGSQLPGECEFLERLENNHYTYISKRH 117
    :||| ||| | | | | | | | | | | | | | | | | | | | | | |
OY 121 T--SWYVALKRGQVYKLSKTGSGKALIFLPM 151
    :||| ||| | | | | | | | | | | | | | | | | | | | | | |
DB 118 ADKNMFVGLKKNNGSKLPRTHYGAKALIFLPL 150
    :||| ||| | | | | | | | | | | | | | | | | | | | | | |

RESULT 13
A33665
acidic fibroblast growth factor 1 precursor [validated] - human
M:Alternate names: beta-ECGF; endothelial cell growth factor Delta; heparin-binding growth
C:Species: Homo sapiens (man)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 08-Dec-2000
C:Accession: A33665; A32316; S18217; A43804; A24662; JH0707; S35535; S35536; 139413; A23
R:Merila, A.; Fischer, E.; Graves, D.; Tumolo, A.; Miller, J.; Gospodarowicz, D.; Abrah
Biochem. Biophys. Res. Commun. 164, 1121-1129, 1989
A:Title: Structural analysis of the gene for human acidic fibroblast growth factor.
A:Reference number: A33665; MUID:90073637.
A:Accession: A33665
A:Molecule type: DNA
A:Residues: 1-155 <MER>
A:Cross-references: GB:M30491
R:Wang, W.P.; Lehtoma, K.; Varban, M.L.; Krishnan, I.; Chiu, I.M.
Mol. Cell. Biol. 9, 2387-2395, 1989
A:Title: Cloning of the gene coding for human class 1 heparin-binding growth factor and
A:Reference number: A32316; MUID:89343957
A:Accession: A32316
A:Molecule type: DNA
A:Residues: 1-155 <WAN>
A:Cross-references: GB:M23087; NID:9183875; PID:AAA52638.1; PID:9386768
R:Wang, W.P.; Quick, D.; Balcerzak, S.P.; Needleman, S.W.; Chiu, I.M.
Oncogene 6, 1521-1529, 1991
A:Title: Cloning and sequence analysis of the human acidic fibroblast growth factor gene
A:Reference number: S18217; MUID:92019819

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A:Accession: S18217
A:Molecule type: DNA
A:Residues: 1-155 <MA2>
A:Cross-references: EMBL:M23086
R:Chiu, I.M.; Wang, W.P.; Lehtoma, K.
Oncogene 5, 755-762, 1990
A:Title: Alternative splicing generates two forms of mRNA coding for human heparin-bi
A:Reference number: A43804; MUID:90265618
A:Accession: A43804
A:Molecule type: mRNA
A:Residues: 1-155 <CHI>
A:Cross-references: EMBL:X51943; NID:932435; PID:CAA36206.1; PID:932436
R:Jaye, M.; Howk, R.; Burgess, W.; Ricca, G.A.; Chiu, I.M.; Ravera, M.W.; O'Brien, S.
Science 233, 541-545, 1986
A:Title: Human endothelial cell growth factor: cloning, nucleotide sequence, and chro
A:Reference number: A24662; MUID:86261805
A:Accession: A24662
A:Molecule type: mRNA
A:Residues: 1-155 <JAY>
A:Cross-references: GB:M13361; NID:9181941; PID:AAA79245.1; PID:9181942
R:Yu, Y.L.; Kha, H.; Golden, J.A.; Mischel, A.A.; Goetzl, E.J.; Turck, C.W.
J. Exp. Med. 175, 1073-1080, 1992
A:Title: An acidic fibroblast growth factor protein generated by alternate splicing a
A:Reference number: JH0707; MUID:92202857
A:Accession: JH0707
A:Molecule type: mRNA
A:Residues: 1-155 <YUY>
A:Cross-references: GB:X65778; NID:9396163; PID:CAA46661.1; PID:9396164
R:Payson, R.A.; Canatan, H.; Chotani, M.A.; Wang, W.P.; Harris, S.E.; Myers, R.L.; Ch
Nucleic Acids Res. 21, 489-495, 1993
A:Title: Cloning of two novel forms of human acidic fibroblast growth factor (afGF) m
A:Reference number: S35535; MUID:93181239
A:Accession: S35535
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-58 <PAY>
A:Cross-references: GB:L01485
A:Accession: S35536
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-58 <PA2>
A:Cross-references: GB:L01487
R:Crumley, G.; Dionne, C.A.; Jaye, M.
Biochem. Biophys. Res. Commun. 171, 7-13, 1990
A:Title: The gene for human acidic fibroblast growth factor encodes two upstream exon
A:Reference number: 139412; MUID:90365758
A:Accession: 139413
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-40 <RES>
A:Cross-references: GB:M60515; NID:9178226; PID:AAA51672.1; PID:9553170; GB:M60516;
R:Harper, J.W.; Striydom, D.J.; Lobd, R.R.
Biochemistry 25, 4097-4103, 1986
A:Reference number: A23553; MUID:86296647
A:Accession: A23553
A:Molecule type: protein
A:Residues: 16-155 <HAR>
R:Giemenz-Galleo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 138, 611-617, 1986
A:Title: The complete amino acid sequence of human brain-derived acidic fibroblast gr
A:Reference number: A24820; MUID:86295741
A:Accession: A24820
A:Molecule type: protein
A:Residues: 16-155 <GIN>
R:Giemenz-Galleo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 135, 541-548, 1986
A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino termin
A:Accession: A24243
A:Molecule type: protein
A:Residues: 16-47 <GI2>
R:Gautschi, P.; Fritter-Schroder, M.; Bohlen, P.

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FEBS Lett. 204, 203-207, 1986
 A:Title: Partial molecular characterization of endothelial cell mitogens from human brain
 A:Reference number: A91364; MUID:86275260
 A:Accession: A24301
 A:Molecule type: protein
 A:Residues: 16-30, 'X', 32-49 <GAU>
 R:Gautschi-Sova, P.; Muller, T.; Bohlen, P.
 Biochem. Biophys. Res. Commun. 140, 874-880, 1986
 A:Title: Amino acid sequence of human acidic fibroblast growth factor.
 A:Reference number: A26386; MUID:87048871
 A:Accession: A26386
 A:Molecule type: protein
 A:Residues: 16-155 <GA2>
 A:Experimental source: brain
 R:Chavan, A.U.; Haley, B.E.; Volkin, D.E.; Marfia, K.E.; Verticelli, A.M.; Bruner, M.W.;
 Biochemistry 33, 7193-7202, 1994
 A:Title: Interaction of nucleotides with acidic fibroblast growth factor (FGF-1).
 A:Reference number: A53639; MUID:94271773
 A:Accession: A53639
 A:Molecule type: Protein
 A:Residues: 16-30, 'X', 32-38; 73-75, 'X', 77-97, 'X', 99-101; 128-131, 'X', 133-140, 'X', 142-152
 C:Genetics: 16
 A:Gene: GDB:FCF1; FGFPA
 A:Cross-references: GDB:119909; OMIM:131220
 A:Map position: Sq31.3-Sq33.2
 A:Introns: 57/1; 91/3
 C:Superfamily: fibroblast growth factor
 C:Keywords: alternative splicing; growth factor; heparin binding
 F:16-155/Product: fibroblast growth factor 1 #status experimental <MAT>
 F:129/Binding site: carbohydrate (Asn) (covalent) #status absent

Query Match 49.6% Score 409.5; DB 1; Length 155;
Best Local Similarity 54.1%; Pred. No. 3,9e-33;
Matches 85; Conservative 16; Mismatches 51; Indels 5; Gaps 2;

OY 1 MAAGSITTLPALPEDGGSGAPPGHFKEDKDRRLCYCKNGGFLRIHPDGRVYGREKSDEPHI 60
 ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 1 MAGGEITTTTALTFEKN--LPFGNYKKRPRLXLYCSNGHFLEILPDGTATVDGRSDSHDI 57

OY 61 KLOLQAEERGVNISKGYCANRYTLAKMEDGRILASKCVTDCECFEFERLESNNNTYRSRKY 120
 :||| :||| :||| :||| :||| :||| :||| :||| :||| :||| :||| :||| :||| :|||
Db 58 QLOASASVEAYVIKSTETGYLAMPTDGLYLGSQQPNDECLEFLEIRLEENHYNTYSKKH 117

OY 121 T-SMYVALKRTOGYKLKSGTKGPQOKAILFLPMSAKS 155
 ::||| ::||| ::||| ::||| ::||| ::||| ::||| ::||| ::||| ::||| ::||| ::|||
Db 118 AEKNWFVLKKNKSCSKRGPRTHYGQKAILFLPLPVSS 154

RESULT 14
S04147

Nucleic acid fibroblast growth factor 1 - rat
C:N/A
N:Alternate names: heparin-binding growth factor 1
C:Species: Rattus norvegicus (Norway rat)
C>Date: 28-Feb-1990 #sequence_revision 28-Feb-1990 #text_change 16-Jul-1999
C:Accession: S04147

R:Goodrich, S.P.; Van, G.C.; Bahrenburg, K.; Mansson, P.E.
Nucleic Acids Res. 17, 2867, 1989

A:Title: The nucleotide sequence of rat heparin binding growth factor 1 (HBGF-1).
A:Reference number: S04147; MUID:89240051

A:Accession: S04147
A:Molecule type: mRNA
A:Residues: 1-155 <CGOO>

C:Cross-references: EMBL:X14232; NID:g56351; PIDN:CAA32448.1; PID:g56352
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor, heparin binding

Query Match	49.08%	Score 404.5	DB 2	Length 155
Best Local Similarity	53.58%	Pred. No. 1.2e-37		
Matches 84	Conservative 17	Mismatches 51	Indels 5	Gaps 0

```

Db      1 MAEGITTFALITERFN---LPLGNKKPKKLKLYCSNGGHLRLILPDGVTCGSTRDSRQH 57
OY      61 KLOLOAEERGVSATKGCVCANRYLAKMEDGRLLASKCVTDCEFFERLESNNVTYSRKY 120
Db      58 QLOLSAEGAGVYIKGTETGYOLAMDPEGGLYGSGOTPNECCLFLERLEENHNVTYSKKA 117
OY      121 T--SMYVALKRTGOYKLGSKGPGOKARILFLPMASK 155
Db      118 AEKNMFVGLKKNKSGCKRGPRIHYQOKAILFLPLPVSS 154

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RESULT 15
D37360
acidic fibroblast growth factor - mouse
N:Alternate names: aFgf, Fgf-1
C:Species: Mus musculus (house mouse)
C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999
C:Accession: D37360; JC5231
R:Hebert, J.M.; Basilico, C.; Goldfarb, M.; Haub, O.; Martin, G.R.
Dev. Biol. 138, 454-463, 1990
A:Title: Isolation of cDNAs encoding four mouse FGF family members and characterization
A:Reference number: A37360; MUID:90201563
A:Accession: D37360
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <HEB>
A:Cross-references: GB:M30641; NID:G193284; PIDN:AAA37618.1; PID:G309236
R:Madial, F.; Hackshaw, K.V.; Chiu, I.M.
Gene 179, 231-236, 1996
A:Title: Cloning and characterization of the mouse Fgf-1 gene.
A:Reference number: JC5231; MUID:97128312
A:Accession: JC5231
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-155 <MAD>
A:Cross-references: GB:U36456
C:Comment: This protein is an inducer of neovascularization in angiogenic disease in
C:Genetics:
A:Gene: Fgf-1
A:Introns: 57/1; 91/3
C:Superfamily: fibroblast growth factor

Query Match	49.08%	Score 404.5	DB 2:	length 155:
Best Local Similarity	53.58%	Pred. No. 1.2e-32:		
Matches	84:	Conservative	17:	Mismatches 51: Indels 5: Gaps 2:
OY	1	MAAGSITTLPALPEGGGSGAPPFGHFKDKRLCYCKNGKGFLLIHPDGRVDGREGSDPI	60	
DB	1	MAEGETITTAALTERFN---LPLGNKKKKLLXCNSGSHFLALPDTGYLDRDRSDQHI	57	
OY	61	KIQLAEEERGVSIIKGYCANRYLAKMEDGRLLASKCVTDECFEERLESNNYNTYRSKY	120	
DB	58	QQLAESAESAGEVIYKGTENGQYLMADTEGLIGSODPNEECFLERLEENHNNTYTSKHH	117	
OY	121	T---SMYVALKRTGYKLGSKTGKGTGKATLFLMSAKS	155	
DB	118	AEKNMFEVGLKKNKSGCRGPRTHYGGQALFLPLPVS	154	

Search completed: June 7, 2002, 14:37:16
Job time: 243 sec

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:42 ; Search time 23.13 Seconds

(without alignments)
259.470 Million cell updates/sec

Title: US-09-802-365-8

Perfect score: 826
Sequence: 1 MAAGSITTLPALPEDGSGA.....GSKTGPQKAILFLPMASKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues

Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%
Listing first 45 summaries

Database : SwissProt.40.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	826	100.0	155	1	FGF2_HUMAN
2	817	98.9	155	1	FGF2_BOVIN
3	811	98.2	155	1	FGF2_SHEEP
4	798.5	96.7	154	1	FGF2_RAT
5	783.5	94.9	154	1	FGF2_MOUSE
6	760.5	92.1	156	1	FGF2_MONDO
7	759	91.9	158	1	FGF2_CHICK
8	738	89.3	137	1	FGF2_RABIT
9	687	83.2	155	1	FGF2_XENLA
10	418.5	50.7	155	1	FGF1_MESAU
11	410.5	49.7	155	1	FGF1_CHICK
12	409.5	49.6	155	1	FGF1_HUMAN
13	404.5	49.0	155	1	FGF1_MOUSE
14	403.5	48.8	152	1	FGF1_PIG
15	393.5	47.6	155	1	FGF1_BOVIN
16	265	32.1	194	1	FGF4_CHICK
17	255.5	30.9	206	1	FGF4_HUMAN
18	253	30.6	256	1	FGF3_BRARE
19	251	30.4	220	1	FGF3_CHICK
20	250	30.3	208	1	FGF6_MOUSE
21	249	30.1	208	1	FGF6_HUMAN
22	248.5	29.4	206	1	FGF4_BOVIN
23	242.5	29.4	264	1	FGF5_MOUSE
24	242.5	29.4	264	1	FGF5_RAT
25	241.5	29.2	202	1	FGF4_MOUSE
26	239	28.9	187	1	FGF4_XENLA
27	237.5	28.8	237	1	FGF3_XENLA
28	237	28.7	245	1	FGF3_MOUSE
29	236	28.6	239	1	FGF3_HUMAN
30	234.5	28.4	192	1	FGF8_XENLA
31	234	28.3	268	1	FGF5_HUMAN
32	217	26.3	208	1	FGF9_HUMAN
33	217	26.3	208	1	FGF9_MOUSE

34	217	26.3	208	1	FGF9_RAT	P36364	rattus norv
35	213	25.8	209	1	FGF9_XENLA	O91875	xenopus lae
36	210.5	25.5	194	1	FGF7_CANFA	P79150	canis famil
37	210	25.4	211	1	FGF8_HUMAN	O9np95	homo sapien
38	209.5	25.4	194	1	FGF7_MOUSE	P36363	mus musculu
39	207.5	25.1	194	1	FGF7_HUMAN	P21781	homo sapien
40	207.5	25.1	194	1	FGF7_SHEEP	P48808	ovis aries
41	206.5	25.0	207	1	FGFG_RAT	O54769	rattus norv
42	205.5	24.9	207	1	FGFG_HUMAN	O43320	homo sapien
43	204.5	24.8	194	1	FGF7_PIG	O9n198	sus scrofa
44	203	24.6	208	1	FGF9_HUMAN	O15520	homo sapien
45	203	24.6	215	1	FGF9_RAT	P70492	rattus norv

ALIGNMENTS

RESULT	1	STANDARD;	PRT;	155 AA.
FGF2_HUMAN				
ID	FGF2_HUMAN			
AC	P09038;			
DT	01-NOV-1988 (Rel. 09, Created)			
DT	01-NOV-1988 (Rel. 09, Last sequence update)			
DT	01-MAR-2002 (Rel. 41, Last annotation update)			
DE	Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatiotin).			
GN	FGF2 OR FGFB.			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.			
OX	NCBI_TaxID=9606;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=87053817; PubMed=3780670;			
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Friedman J.,			
RA	Gospodarowicz D., Fiddes J.C.;			
RT	"Human basic fibroblast growth factor: nucleotide sequence and genomic organization.";			
RT	EMBO J. 5:2523-2528(1986).			
RN	[2]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=87217066; PubMed=3472745;			
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;			
RT	"Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";			
RT	Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).			
RN	[3]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=87213238; PubMed=3579930;			
RA	Sommer A., Brewer M.T., Thompson R.C., Moscatelli D., Presta M.,			
RA	Rifkin D.B.;			
RT	"A form of human basic fibroblast growth factor with an extended amino terminus.";			
RT	Biochem. Biophys. Res. Commun. 144:543-550(1987).			
RN	[4]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=87162468; PubMed=2435575;			
RA	Kurokawa T., Sasada R., Iwane M., Igarashi K.;			
RT	"Cloning and expression of cDNA encoding human basic fibroblast growth factor.";			
RT	FEBS Lett. 213:189-194(1987).			
RN	[5]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=89184522; PubMed=2538817;			
RA	Prats H., Kaghad M., Prats A.C., Klagesbrun M., Lellis J.M.,			
RA	Ulaunz P., Chalou P., Tauber J.P., Amalric F., Smith J.A.,			
RT	Caput D.;			
RT	"High molecular mass forms of basic fibroblast growth factor are initiated by alternative CUG codons.";			
RT	Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).			
RN	[6]			
RP	SEQUENCE OF 10-35.			
RX	MEDLINE=86275260; PubMed=3732516;			

RA Gautschi P., Frater-Schroeder M., Boehlen P.;
 RT "Partial molecular characterization of endothelial cell mitogens from
 human brain: acidic and basic fibroblast growth factors.";
 RL FEBS Lett. 204:203-207(1986).
 [17]
 RN SEQUENCE OF 10-39.
 RP MEDLINE=86186784; PubMed=3964259;
 RA Glanzer-Galligo G., Conn G., Hatcher V.B., Thomas K.A.;
 RT "Human brain-derived acidic and basic fibroblast growth factors:
 amino terminal sequences and specific mitogenic activities.";
 RL Biochem. Biophys. Res. Commun. 135:541-548(1986).
 [8]
 RN SEQUENCE OF 2-22.
 RP MEDLINE=87156686; PubMed=2435284;
 RA Story M.T., Esch F., Shimazaki S., Sasse J., Jacobs S.C., Lawson R.K.;
 RT "Amino-terminal sequence of a large form of basic fibroblast growth
 factor isolated from human benign prostatic hyperplastic tissue.";
 RL Biochem. Biophys. Res. Commun. 142:702-709(1987).
 [9]
 RN X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
 RP MEDLINE=91195367; PubMed=1707542;
 RA Eriksson A.E., Cousens L.S., Weaver L.H., Matthews B.W.;
 RT "Three-dimensional structure of human basic fibroblast growth
 factor.";
 RL Proc. Natl. Acad. Sci. U.S.A. 88:3441-3445(1991).
 [10]
 RN X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
 RP MEDLINE=94004464; PubMed=7691311;
 RA Eriksson A.E., Cousens L.S., Matthews B.W.;
 RT "Refinement of the structure of human basic fibroblast growth factor
 at 1.6-A resolution and analysis of presumed heparin binding sites by
 selenate substitution.";
 RL Protein Sci. 2:1274-1284(1993).
 [11]
 RN X-RAY CRYSTALLOGRAPHY (1.8 ANGSTROMS).
 RP MEDLINE=91195368; PubMed=1849658;
 RA Zhang J., Cousens L.S., Barr P.J., Sprang S.R.;
 RT "Three-dimensional structure of human basic fibroblast growth factor,
 a structural homolog of interleukin 1 beta.";
 RL Proc. Natl. Acad. Sci. U.S.A. 88:3446-3451(1991).
 [12]
 RN X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
 RP MEDLINE=92121151; PubMed=1769963;
 RA Ago H., Kitagawa Y., Fujishima A., Matsuura Y., Katsube Y.;
 RT "Crystal structure of basic fibroblast growth factor at 1.6-A
 resolution.";
 RL J. Biochem. 110:360-363(1991).
 [13]
 RN X-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS).
 RP MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T.,
 Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth
 factors.";
 RL Science 251:90-93(1991).
 [14]
 RN STRUCTURE BY NMR.
 RP MEDLINE=97040521; PubMed=8885834;
 RA Moy F.J., Seddon A.P., Boehlen P., Powers R.;
 RT "High-resolution solution structure of basic fibroblast growth factor
 determined by multidimensional heteronuclear magnetic resonance
 spectroscopy.";
 RL Biochemistry 35:13552-13561(1996).
 -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CONCENTRATION OF THESE 2 GROWTH FACTORS.
 -I- SUBUNIT: MONOMER.
 -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 ANGIF.
 -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 or_send_email_to_license@isb-sib.ch](http://www.isb-sib.ch/announce/or_send_email_to_license@isb-sib.ch)).
 CC -----
 DR EMBL; M17599; AAA52534.1; ALT_INIT.
 DR EMBL; X04431; CAA28027.1; -
 DR EMBL; X04432; CAA28028.1; -
 DR EMBL; X04433; CAA28029.1; -
 DR EMBL; M27968; AAA52448.1; -
 DR EMBL; J04513; AAA52533.1; ALT_INIT.
 DR PIR; A25824; A25824.
 DR PIR; A26642; A26642.
 DR PIR; B24243; B24243.
 DR PIR; B24301; B24301.
 DR PIR; B32878; B32878.
 DR PIR; S00297; S00297.
 DR PDB; 2FGF; 15-APR-92.
 DR PDB; 4FGF; 15-JUL-93.
 DR PDB; 1FGA; 15-JUL-93.
 DR PDB; 1BFB; 03-APR-96.
 DR PDB; 1BFC; 03-APR-96.
 DR PDB; 1BFG; 16-JUN-97.
 DR PDB; 1BFG; 31-JAN-94.
 DR PDB; 2BFH; 30-APR-94.
 DR PDB; 1BLA; 08-NOV-96.
 DR PDB; 1BLD; 08-NOV-96.
 DR MIM; 134920; -
 DR InterPro; IPR002209; HBGF_FGF.
 DR InterPro; IPR002348; IL1_HBGF.
 DR Pfam; PF00167; FGF; 1.
 DR PRINTS; PRO0262; ILHBGF.
 DR PRODOM; PD000831; HBGF_FGF; 1.
 DR SMART; SM00442; FGF; 1.
 DR PROSITE; PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 46 48
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT TURN 35 38
 FT STRAND 39 43
 FT TURN 45 46
 FT STRAND 49 52
 FT TURN 55 56
 FT HELIX 58 60
 FT STRAND 62 66
 FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 FT STRAND 113 117
 FT TURN 121 122
 FT STRAND 124 124
 FT STRAND 127 127
 FT TURN 129 130
 FT STRAND 132 133
 FT HELIX 136 138
 FT TURN 141 142
 FT HELIX 144 146
 FT STRAND 148 152
 FT SEQUENCE 155 AA; 17254 MW; B6CE13373007129 CRC64;

Query Match 100.0%; Score 826; DB 1; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2,6e-79;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITLPALEPDGGSGAEPFGFKDPKRLYCKNGGFFLRIHPDGRVGVREKSDPHI 60
 D 1 MAAGSITLPALEPDGGSGAEPFGFKDPKRLYCKNGGFFLRIHPDGRVGVREKSDPHI 60
 QY 61 KIQLOAERGVVSTIGVCANRYLAKMEDGNILASCVYDECFEERLESNNNTYRSRY 120
 D 61 KIQLOAERGVVSTIGVCANRYLAKMEDGNILASCVYDECFEERLESNNNTYRSRY 120
 QY 121 TSMVYALKRTGQYKLGSKTGPQOKAILFLPMASAKS 155
 D 121 TSMVYALKRTGQYKLGSKTGPQOKAILFLPMASAKS 155

RESULT 2
 FGF2_BOVIN STANDARD; PRT; 155 AA.
 AC P03969;
 DT 23-OCT-1986 (Rel. 02, Created)
 DT 23-OCT-1986 (Rel. 02, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast growth factor) (BGF) (Prostatropin) [Contains: Kidney-derived growth factor].
 GN FGF2 OR FGF-2.
 OS Bos taurus (Bovine).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae; Bovinae; Bos.
 OC NCBI_TaxID:9913;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=86261806; PubMed=2425435;
 RA Abraham J.A., Mergia A., Whang J.L., Tumolo A., Friedman J., Hierlild K.A., Gospodarowicz D., Fiddes J.C.;
 RT "Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic fibroblast growth factor.";
 RL Science 233:545-548(1986).
 RN [2]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=87217066; PubMed=3472745;
 RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;
 RT "Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";
 RL Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).
 RN [3]
 RP SEQUENCE OF 10-155.
 RX MEDLINE=86016731; PubMed=3863109;
 RA Esch F., Baird A., Ling N., Ueno N., Hill F., Denoroy L., Klepper R., Gospodarowicz D., Boehlen P., Guillemin R.;
 RT "Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and comparison with the amino-terminal sequence of bovine brain acidic FGF.";
 RL Proc. Natl. Acad. Sci. U.S.A. 82:6507-6511(1985).
 RN [4]
 RP SEQUENCE OF 1-9.
 RX MEDLINE=86295737; PubMed=3741423;
 RA Ueno N., Baird A., Esch F., Ling N., Guillemin R.;
 RT "Isolation of an amino terminal extended form of basic fibroblast growth factor.";
 RL Biochem. Biophys. Res. Commun. 138:580-588(1986).
 RN [5]
 RP SEQUENCE OF 25-41.
 RC TISSUE=Kidney;
 RX MEDLINE=86095426; PubMed=4081126;
 RA Baird A., Esch F., Boehlen P., Ling N., Gospodarowicz D.;
 RT "Isolation and partial characterization of an endothelial cell growth factor from the bovine kidney: homology with basic fibroblast growth factor.";

RL Regul. Pept. 12:201-213(1985).
 RN [6]
 RP SEQUENCE OF 21-40.
 RC TISSUE=Kidney;
 RX MEDLINE=87119165; PubMed=3809608;
 RA Ueno N., Baird A., Esch F., Shimasaki S., Ling N., Guillemin R.;
 RT "Purification and partial characterization of a mitogenic factor from bovine liver: structural homology with basic fibroblast growth factor.";
 RL Regul. Pept. 16:135-145(1986).
 RN [7]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RX MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T., Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth factors.";
 RL Science 251:90-93(1991).
 CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -!- SUBUNIT: MONOMER.
 CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES AFGF.
 CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC -----
 CC EMBL: M13440; AAA0518.1; -.
 DR PIR: A24663; GKBOB.
 DR PIR: A24819; A24819.
 DR PIR: A32878; A32878.
 DR PDB: 1BAS; 31-OCT-93.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IIL-HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; IILHBGF.
 DR ProDom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; 3D-structure.
 KW PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 25 155
 FT SITE 46 98
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT TURN 35 38
 FT STRAND 39 43
 FT TURN 45 46
 FT STRAND 49 52
 FT TURN 55 56
 FT HELIX 58 60
 FT STRAND 62 68
 FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 FT HEPARIN-BINDING GROWTH FACTOR 2.
 FT KIDNEY-DERIVED GROWTH FACTOR.
 FT CELL ATTACHMENT SITE (POTENTIAL).
 FT CELL ATTACHMENT SITE (POTENTIAL).
 FT HEPARIN (POTENTIAL).
 FT HEPARIN (POTENTIAL).

FT STRAND 113 117
 FT TURN 121 122
 FT STRAND 124 124
 FT STRAND 127 127
 FT TURN 129 130
 FT STRAND 133 133
 FT HELIX 136 138
 FT TURN 141 142
 FT HELIX 144 146
 FT STRAND 148 151
 SQ SEQUENCE 155 AA; 17250 MW; BE6CE70FA6107129 CRC64;

Query Match 98.9%; Score 817; DB 1; Length 155;
 Best Local Similarity 98.7%; Pred. No. 2,3e-78;
 Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCYCKNGFFLRHDPGRVDGVEKSDPHI 60
 DB 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCYCKNGFFLRHDPGRVDGVEKSDPHI 60
 QY 61 KIOLAEEERGVSIGVCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 DB 61 KIOLAEEERGVSIGVCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 QY 121 TSMYVALKRTGOYKLGSKTGPCKALFLPMSAKS 155
 DB 121 TSMYVALKRTGOYKLGSKTGPCKALFLPMSAKS 155

RESULT 3
 FGF2_SHEEP STANDARD; PRT: 155 AA.

AC P20003;
 DT 01-FEB-1991 (Rel. 17, Created)
 DT 01-FEB-1996 (Rel. 33, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatropin).
 GN FGF2 OR FGF-2.
 OS Ovis aries (Sheep).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae; Bovidae; Caprinae; Ovis.
 OC NCBI_TaxID=9940;
 RA [1]
 RP SEQUENCE FROM N.A.
 RA Sutton R., Ward W.G., Raphael K.A., Cam G.R.;
 RL Submitted (SEP-1994) to the EMBL/Genbank/DBJ databases.
 RN [2]
 RP SEQUENCE OF 9-155.
 RA MEDLINE=88055577; PubMed=3678486;
 RA Simpson R.J., Moritz R.L., Lloyd C.J., Fabri L.J., Nice E.C.,
 RA Rubira M.R., Burgess A.W.;
 RA "Primary structure of ovine pituitary basic fibroblast growth factor."
 RT FEBS Lett. 224:128-132(1987).
 RL
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC
 CC -1- SUBUNIT: MONOMER.
 CC
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES AFGF.
 CC
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.

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CC -----
 DR EMBL, L36136; AAA31519.1; -
 DR PIR, S00185; S00185.
 DR HSSP, P09038; 1BFF.
 DR InterPro, IPR002209; HBGF_FGF.
 DR InterPro, IPR002348; ILL_HBGF.
 DR Pfam, PF00167; FGF_1.
 DR PRINTS, PR00262; ILAHGF.
 DR ProDom, PD000831; HBGF_FGF_1.
 DR SMART, SM00442; FGF_1.
 DR PROSITE, PS00247; HBGF_FGF_1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 FT PROPEP 1
 FT CHAIN 10 155
 FT SITE 45 48
 FT SITE 87 90
 FT BINDING 27 31
 FT BINDING 116 119
 SQ SEQUENCE 155 AA; 17280 MW; B5F2364BA610606D CRC64;

Query Match 98.2%; Score 811; DB 1; Length 155;
 Best Local Similarity 98.1%; Pred. No. 9,7e-78;
 Matches 152; Conservative 1; Mismatches 2; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCYCKNGFFLRHDPGRVDGVEKSDPHI 60
 DB 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCYCKNGFFLRHDPGRVDGVEKSDPHI 60
 QY 61 KIOLAEEERGVSIGVCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 DB 61 KIOLAEEERGVSIGVCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 QY 121 TSMYVALKRTGOYKLGSKTGPCKALFLPMSAKS 155
 DB 121 TSMYVALKRTGOYKLGSKTGPCKALFLPMSAKS 155

RESULT 4
 FGF2_RAT STANDARD; PRT: 154 AA.

AC P13109;
 DT 01-JAN-1990 (Rel. 13, Created)
 DT 01-JAN-1990 (Rel. 13, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatropin).
 GN FGF2 OR FGF-2.
 OS Rattus norvegicus (Rat).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
 OC NCBI_TaxID=10116;
 RA [1]
 RP SEQUENCE FROM N.A.
 RA STRAIN=SPRAGUE-DAWLEY; TISSUE=Ovary;
 RX MEDLINE=89061721; PubMed=3196337;
 RA Shimasaki S., Emoto N., Koba A., Mercado M., Shibata F.,
 RA Cooksey K., Baird A., Ling N.;
 RT "Complementary DNA cloning and sequencing of rat ovarian basic fibroblast growth factor and tissue distribution study of its mRNA."
 RL Biochem. Biophys. Res. Commun. 157:256-263(1988).
 RN [2]
 RP SEQUENCE FROM N.A.
 RX TISSUE=Brain;
 RX MEDLINE=88262516; PubMed=3387229;
 RA Kurokawa T., Sano M., Igarashi K.;
 RT "Nucleotide sequence of rat basic fibroblast growth factor cDNA."
 RL Nucleic Acids Res. 16:5201-5201(1988).
 RN [3]
 RP SEQUENCE OF 1-28 FROM N.A.
 RX STRAIN=SPRAGUE-DAWLEY; TISSUE=Testis;
 RX MEDLINE=97200905; PubMed=9048734;
 RA Pasumathil K.B.S., Jin Y., Cattini P.A.;

RT "Cloning of the rat fibroblast growth factor-2 promoter region and
RT its response to mitogenic stimuli in glioma C6 cells.";
RT J. Neurochem. 68:898-908(1997).
RN [4]
RP SEQUENCE OF 35-154 FROM N.A.
RC STRAIN=SPRAGUE-DAWLEY; TISSUE=Brain;
RA MEDLINE=92329546; PubMed=1378302;
RA El-Huseini A.E.D., Paterson J.A., Myal Y., Shiu R.P.C.;
RT "PCR detection of the rat brain basic fibroblast growth factor (bFGF)
RT mRNA containing a unique 3' untranslated region.";
RL Biochim. Biophys. Acta 1131:314-316(1992).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- TISSUE SPECIFICITY: FOUND IN ALL THE TISSUES EXAMINED.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AREG.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@sib-sib.ch).

DR EMBL; M22427; AAA41210.1; -;
DR EMBL; X07285; CA30265.1; -;
DR EMBL; U78079; AAC53225.1; -;
DR EMBL; X61697; CAA43863.1; -;
DR PIR; S00876; S00876.
DR PIR; A31674; A31674.
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SO SEQUENCE 154 AA; 17139 MW; 1A0F14F423D8403 CRC64;

Query Match 96.7%; Score 798.5; DB 1; Length 154;
Best Local Similarity 96.8%; Pred. No. 2e-76; 0; Indels 1; Gaps 1;
Matches 150; Conservative 4; Mismatches 0;

QY 1 MAAGSITTLPALPEDGSGAFPFGHFKDPKRLYCKNGGFFLRIHPDGRVDGYREKSDPHI 60
DB 1 MAAGSITSLPALPEDG-GAFPFGHFKDPKRLYCKNGGFFLRIHPDGRVDGYREKSDPHV 59

QY 61 KIOLAEEERGVSISGVCANRYLAMKEDGRLLASKCVDCEFFERLESNNNTYRSRY 120
DB 60 KIOLAEEERGVSISGVCANRYLAMKEDGRLLASKCVDCEFFERLESNNNTYRSRY 119

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
DB 120 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 154

RESULT 5
FGF2_MOUSE
ID_FGF2_MOUSE STANDARD; PRT; 154 AA.
AC P15655.
DT 01-APR-1990 (Rel. 14, Created)

DT 01-APR-1990 (Rel. 14, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (bFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Euteria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=90201563; PubMed=2318343;
RA Hebert J.M., Basillio C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cdnas encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [2]
RP SEQUENCE FROM N.A.
RC STRAIN=C57BL/6J, A/J, AND NOD/LtJ; TISSUE=Spleen;
RA Ma R.Z., Teuscher C.;
RT Submitted (May-1998) to the EMBL/GenBank/DBJ databases.
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AREG.
CC -----
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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DR EMBL; M30644; AAA37621.1; -;
DR EMBL; AF065903; AAC17503.1; -;
DR EMBL; AF065904; AAC17504.1; -;
DR EMBL; AF065905; AAC17505.1; -;
DR PIR; C37360; C37360.
DR HSSP; P09038; 1BFF.
DR MGD; MG1:9516; Fgf2.
DR InterPro; IPR002309; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SO SEQUENCE 154 AA; 17153 MW; 689F677416274388 CRC64;

Query Match 94.9%; Score 783.5; DB 1; Length 154;
Best Local Similarity 94.8%; Pred. No. 7.2e-75;
Matches 147; Conservative 5; Mismatches 2; Indels 1; Gaps 1;

QY 1 MAAGSITTLPALPEDGSGAFPFGHFKDPKRLYCKNGGFFLRIHPDGRVDGYREKSDPHI 60
DB 1 MAAGSITSLPALPEDGGA-AFPFGHFKDPKRLYCKNGGFFLRIHPDGRVDGYREKSDPHV 59

QY 61 KIOLAEEERGVSISGVCANRYLAMKEDGRLLASKCVDCEFFERLESNNNTYRSRY 120
DB 60 KIOLAEEERGVSISGVCANRYLAMKEDGRLLASKCVDCEFFERLESNNNTYRSRY 119

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155

Db 120 SSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 154

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RESULT 6
FGF2_MONDO
ID FGF2_MONDO STANDARD: PRT: 156 AA.
AC P48798;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
DE growth factor) (BFGF) (Prostactropin).
GN FGF2.
OS Monodelphis domestica (Short-tailed grey opossum).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Metatheria; Didelphimorphia; Didelphidae; Monodelphis.
OC NCBI_TaxID=13616;
RX MEDLINE=94296558; PubMed=8024698;
RC Tissue=Eye;
RA Kusewitt D.F., Sabourin C.L.K., Sherburn T.E., Ley R.D.;
RT "Characterization of cDNA encoding basic fibroblast growth factor of
RT the marsupial Monodelphis domestica.";
RL DNA Cell Biol. 13:549-554(1994).
CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -I- SUBUNIT: MONOMER.
CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: Z15154; CAI78854.1; ALT_INT.
DR HSSP: P09038; IBBF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILI_HBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9 BY SIMILARITY.
FT CHAIN 10 156 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 28 32 HEPARIN (POTENTIAL).
FT BINDING 117 120 HEPARIN (POTENTIAL).
SQ SEQUENCE 156 AA: 17303 MW; 7E655FC49BF1209 CRC64;
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Query Match 92.1%; Score 760.5; DB 1; Length 156;
Best Local Similarity 92.1%; Pred. No. 1.9e-72;
Matches 145; Conservative 5; Mismatches 5; Indels 1; Gaps 1;

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QY 1 MAAGSTITLPALEPD-GSGAEPGPHFKDPKRLCKNGGFLRIHPDGRVDGVRKSDPH 59
DB 1 MAAGSTITLPALEPDGGGGAEPGPHFKDPKRLCKNGGFLRIHPDGRVDGVRKSDPN 60
QY 60 ILQLQAEERGVASIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYTYRSRK 119
DB 61 ILQLQAEERGVASIKGVCANRYLAMKEDGRLALKYVEECFFERLESNNYTYRSRK 120
QY 120 YTSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
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Db 121 SSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 156

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RESULT 7
FGF2_CHICK
ID FGF2_CHICK STANDARD: PRT: 158 AA.
AC P48800;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
DE growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OC NCBI_TaxID=9031;
RX MEDLINE=93246053; PubMed=7683281;
RC Tissue=Skin;
RA Bojia A.Z., Zeller R., Meijers C.;
RT "Expression of alternatively spliced bfgf first coding exons and
RT antisense mRNAs during chicken embryogenesis.";
RL Dev. Biol. 157:110-118(1993).
CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -I- SUBUNIT: MONOMER.
CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: M95707; AAA48617.1; -.
DR HSSP: P09038; IBBF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILI_HBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 12 BY SIMILARITY.
FT CHAIN 13 158 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 30 34 HEPARIN (POTENTIAL).
FT BINDING 119 122 HEPARIN (POTENTIAL).
SQ SEQUENCE 158 AA: 17374 MW; 7B69B684C17F1816 CRC64;
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Query Match 91.9%; Score 759; DB 1; Length 158;
Best Local Similarity 92.2%; Pred. No. 2.7e-72;
Matches 142; Conservative 5; Mismatches 7; Indels 0; Gaps 0;

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QY 2 AAGSTITLPALEDDGSGAEPGPHFKDPKRLCKNGGFLRIHPDGRVDGVRKSDPH 61
DB 5 AAGSTITLPALEDDGGGGAEPGPHFKDPKRLCKNGGFLRIHPDGRVDGVRKSDPH 64
QY 62 LQLQAEERGVASIKGVCANRYLAMKEDGRLASKCVTDCFFERLESNNYTYRSKRYT 121
DB 65 LQLQAEERGVASIKGVANRYLAMKEDGRLALKGATCECFEERLESNNYTYRSKRY 124
QY 122 SSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
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Db 125 DMVVALKRTGQYKPGPKTGPCOKAILFLPMSAKS 158

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RESULT 8
FGF2_RABIT ID FGF2_RABIT STANDARD; PRT; 137 AA.
AC P48799;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatropin) (Fragment).
GN FGF2.
OS Oryctolagus cuniculus (Rabbit).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX NCBI_TaxID=9986;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=NEW ZEALAND WHITE; TISSUE=Smooth muscle;
RX MEDLINE=9343209; Pubmed=8342599;
RA Winkles J.A., Friesel R., Alberts G.F., Janat M.F., Liau G.;
RT "Elevated expression of basic fibroblast growth factor in an immortalized rabbit smooth muscle cell line.";
RL Am. J. Pathol. 143:518-527(1993).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC EMBL; J12034; AAA31248.1; -.
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR Pfam; PF00167; FGF; 1.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT BINDING 18 22 HEPARIN (POTENTIAL).
FT BINDING 107 110 HEPARIN (POTENTIAL).
FT NON_TER 137
SQ SEQUENCE 137 AA; 15418 MW; 0D9EE457B8BE8C51 CRC64;
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Query Match 89.38; Score 738; DB 1; Length 137;
Best Local Similarity 99.38; Pred. No. 3.6e-70;
Matches 136; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

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QY 10 PALLEDGSGAAPPGHFDPKRLCKNGGFLRLIHPDGRVGVREKSDPHIKLOLQAEER 69
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DB 1 PALLEDGSGAAPPGHFDPKRLCKNGGFLRLIHPDGRVGVREKSDPHIKLOLQAEER 60
|||
QY 70 GVASIKGVANRYLAMKEDGRLASKCVTDCEFFERLESNNYTSRSRYTSWYVALKR 129
|||
DB 61 GVASIKGVANRYLAMKEDGRLASKCVTDCEFFERLESNNYTSRSRYTSWYVALKR 120
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QY 130 TGOYKLSKTPGOKAI 146
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DB 121 TGOYKLSKTPGOKAI 137
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RESULT 9
FGF2_XENLA ID FGF2_XENLA STANDARD; PRT; 155 AA.
AC P12226;
DT 01-OCT-1989 (Rel. 12, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; OC Amphibia; Batrachia; Anura; Mesobatrachia; Pipoidae; Pipidae; OC Xenopodinae; Xenopus.
OX NCBI_TaxID=8355;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89058621; Pubmed=3194757;
RA Krimelman D., Abraham J., Haaparanta T., Palisi T., Kirschner M.;
RT "The presence of fibroblast growth factor in the frog egg: its role as a natural mesoderm inducer.";
RL Science 242:1053-1056(1988).
RN [2]
RP SEQUENCE OF 95-155 FROM N.A.
RX MEDLINE=88052890; Pubmed=3479265;
RA Krimelman D., Kirschner M.;
RT "Synergistic induction of mesoderm by FGF and TGF-beta and the identification of an mRNA coding for FGF in the early Xenopus embryo.";
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CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC EMBL; M18067; AAA49726.1; -.
DR PIR; A29618; A29618.
DR PIR; A40117; A40117.
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR Pfam; PF00167; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
FT CONFLICT 111 111 MISSING (IN REF. 2).
SQ SEQUENCE 155 AA; 17241 MW; 036735C8063142FD CRC64;
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Query Match 83.28; Score 687; DB 1; Length 155;
Best Local Similarity 83.98; Pred. No. 8.8e-65;
Matches 130; Conservative 9; Mismatches 16; Indels 0; Gaps 0;

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QY 1 MAAGSITLPALEDGSGAAPPGHFDPKRLCKNGGFLRLIHPDGRVGVREKSDPHI 60
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DB 1 MAAGSITLPALEDGSGAAPPGHFDPKRLCKNGGFLRLIHPDGRVGVREKSDPHI 60
|||
QY 61 KLOLQAEERGVASTKGVANRYLAMKEDGRLASKCVTDCEFFERLESNNYTSRSRY 120
|||
DB 61 KLOLQAEERGVASTKGVANRYLAMKEDGRLASKCVTDCEFFERLESNNYTSRSRY 120
|||
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Db 1 MAEGEITFTFTALPERFG---LPLGNKKPKLLYCSNGHFRLRLPDGKVDGTRDSDOI 57
QY 61 KLOQAERGVSISIKGCANRYLAKMEDGELLASKCVTDECFPERLSSNNYNTYRSRY 120
Db 58 QLOQSAEDVGCVYIKSTRASGOYLAMDNLGILYGSOLPEGECLFLERLENNHYNTYISKH 117
QY 121 T-SMYVALKRTGOYKLGSKTGPGOKAILFLPM 151
Db 118 ADKNWPFVGLKKNGSKLGRPTHYGOKAILFLPL 150

RESULT 12
FGFI_HUMAN
ID FGFI_HUMAN STANDARD; PRT; 155 AA.
AC P05230; P07502;
DT 13-AUG-1987 (Rel. 05, Created)
DT 13-AUG-1987 (Rel. 05, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF) (Beta-endothelial cell growth factor) (ECGF-beta).
DE beta).
GN FGFI OR FGFA.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Homidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=86261805; PubMed=3523756;
RA Jaye M., Hawk R., Burgess W., Ricca G.A., Chiu I.-M., Ravera M.W., O'Brien S.J., Modi W.S., Maciag T., Drohan W.N.;
RT "Human endothelial cell growth factor: cloning, nucleotide sequence, RT and chromosome localization.";
RL Science 233:541-545(1986).
RN [2]
RP SEQUENCE FROM N.A.
RC TISSUE=Brain stem;
RX MEDLINE=89343957; PubMed=2474753;
RA Wang W.P., Lehtoma K., Varban M.L., Krishnan I., Chiu I.M.;
RT "Cloning of the gene coding for human class 1 heparin-binding growth factor and its expression in fetal tissues.";
RL Mol. Cell. Biol. 9:2387-2395(1989).
RN [3]
RP SEQUENCE FROM N.A.
RC TISSUE=Brain stem;
RX MEDLINE=90265618; PubMed=1693186;
RA Chiu I.M., Wang W.P., Lehtoma K.;
RT "Alternative splicing generates two forms of mRNA coding for human heparin-binding growth factor 1.";
RL Oncogene 5:755-762(1990).
RN [4]
RP SEQUENCE FROM N.A.
RX MEDLINE=90073637; PubMed=2590193;
RA Megjia A., Tischer E., Graves D., Tumorlo A., Miller J., Rasopodarowicz D., Abraham J.A., Shipley G.D., Fiddes J.C.;
RT "Structural analysis of the gene for human acidic fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 164:1121-1129(1989).
RN [5]
RP SEQUENCE FROM N.A.
RX MEDLINE=92019819; PubMed=1717925;
RA Wang W.P., Quick D., Balcerzak S.P., Needleman S.W., Chiu I.M.;
RT "Cloning and sequence analysis of the human acidic fibroblast growth factor gene and its preservation in leukemia patients.";
RL Oncogene 6:1521-1529(1991).
RN [6]
RP SEQUENCE FROM N.A.
RX MEDLINE=92202857; PubMed=1372643;
RA Li Y.L., Kha H., Golden J.A., Mischelisen A.A.J., Goetzl E.J., Turk E.J.;
RT "An acidic fibroblast growth factor protein generated by alternate RT splicing acts like an antagonist.";
RL J. Exp. Med. 175:1073-1080(1992).

RN [7]
RP SEQUENCE OF 1-154 FROM N.A.
RX MEDLINE=94069734; PubMed=7504343;
RA Zhao X.M., Yeoh T.K., Hiebert M., First W.H., Miller G.G.;
RT "The expression of acidic fibroblast growth factor (heparin-binding RT growth factor-1) and cytokine genes in human cardiac allografts and T cells.";
RL Transplantation 56:1177-1182(1993).
RN [8]
RP SEQUENCE OF 1-40 FROM N.A.
RX MEDLINE=90365758; PubMed=2393407;
RA Crumley G., Dionne C.A., Jaye M.;
RT "The gene for human acidic fibroblast growth factor encodes two RT upstream exons alternatively spliced to the first coding exon.";
RL Biochem. Biophys. Res. Commun. 171:7-13(1990).
RN [9]
RP SEQUENCE OF 16-155.
RX MEDLINE=86296647; PubMed=2427112;
RA Harper J.W., Strydom D.J., Lobb R.R.;
RT "Human class 1 heparin-binding growth factor: structure and homology RT to bovine acidic brain fibroblast growth factor.";
RL Biochemistry 25:4097-4103(1986).
RN [10]
RP SEQUENCE OF 16-155.
RX MEDLINE=86295741; PubMed=3527167;
RA Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "The complete amino acid sequence of human brain-derived acidic RT fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 138:611-617(1986).
RN [11]
RP SEQUENCE OF 16-155.
RX MEDLINE=87048871; PubMed=3778488;
RA Gautschi-Sova P., Mueller T., Boehlen P.;
RT "Amino acid sequence of human acidic fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 140:874-880(1986).
RN [12]
RP SEQUENCE OF 16-47.
RX MEDLINE=86186784; PubMed=3964259;
RA Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "Human brain-derived acidic and basic fibroblast growth factors: amino terminal sequences and specific mitogenic activities.";
RL Biochem. Biophys. Res. Commun. 135:541-548(1986).
RN [13]
RP SEQUENCE OF 16-49.
RX MEDLINE=86275260; PubMed=3732516;
RA Gautschi P., Fraetzer-Schroeder M., Boehlen P.;
RT "Partial molecular characterization of endothelial cell mitogens from human brain: acidic and basic fibroblast growth factors.";
RL FEBS Lett. 204:203-207(1986).
RN [14]
RP X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS).
RX MEDLINE=96194129; PubMed=8652550;
RA Blaber M., Disalvo J., Thomas K.A.;
RT "X-ray crystal structure of human acidic fibroblast growth factor.";
RL Biochemistry 35:2086-2094(1996).
RN [15]
RP STRUCTURE BY NMR OF 24-155.
RX MEDLINE=94356885; PubMed=7521397;
RA Pineda-Lucena A., Jimenez M.A., Nieto J.L., Santoro J., Rico M., Gimenez-Gallego G.;
RT "1H-NMR assignment and solution structure of human acidic fibroblast growth factor activated by inositol hexasulfate.";
RL J. Mol. Biol. 242:81-98(1994).
RN [16]
RP STRUCTURE BY NMR OF 24-155.
RX MEDLINE=97107535; PubMed=8950275;
RA Pineda-Lucena A., Jimenez M.A., Lozano R.M., Nieto J.L., Santoro J., Rico M., Gimenez-Gallego G.;
RT "Three-dimensional structure of acidic fibroblast growth factor in solution: effects of binding to a heparin functional analog.";
RL J. Mol. Biol. 264:162-178(1996).
RN [17]
RP STRUCTURE BY NMR OF 25-155.

RX MEDLINE-98387896; PubMed-9719643;
RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gimenez-Gallego G.;
RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
6-naphthalenesulfonate: a minimal model for the anti-tumoral
RT action of suramin and suradistas.";
RL J. Mol. Biol. 281:899-915(1998).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES HBGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; M13361; AAA79245.1; -;
DR EMBL; X51943; CA36206.1; -;
DR EMBL; M30492; AAA52446.1; -;
DR EMBL; M30490; AAA52446.1; JOINED.
DR EMBL; M30491; AAA52446.1; JOINED.
DR EMBL; M60515; AAA51672.1; -;
DR EMBL; M60516; AAA51673.1; -;
DR EMBL; M23087; AAA52638.1; -;
DR EMBL; M23086; AAA52638.1; JOINED.
DR EMBL; S67291; AA829057.2; -;
DR EMBL; X65778; CAA46661.1; -;
DR PIR; A23553; A23553.
DR PIR; A24243; A24243.
DR PIR; A24301; A24301.
DR PIR; A24662; A24662.
DR PIR; A24820; A24820.
DR PIR; A26386; A26386.
DR PIR; A26365; A26365.
DR PIR; S18217; S18217.
DR PDB; 2AFG; 1S-OCT-95.
DR PDB; 1AXM; 22-APR-98.
DR PDB; 2AXM; 22-APR-98.
DR PDB; 1RML; 11-NOV-98.
DR MIM; 131220; -;
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IIL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IIL_HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
KW 3D-structure.
FT PROPEP 1 15
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT MOD_RES 2 2 ACETYLATION.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17460 MW; F586E8BF09F1580 CRC64;
Query Match 49.6%; Score 409.5; DB 1; Length 155;
Best Local Similarity 54.1%; Pred. No. 8.7e-36;
Matches 85; Conservative 16; Mismatches 51; Indels 5; Gaps 2;
OY 1 MAAGSITTLPALPEDGSGAFPFGHKDPKRLYCKNGGFFLRIHDPGRVGVREKSDPHI 60
DB 1 MAEGETITFTALTEKFN--LPPGNVKKRKLILYCSGSHFLILPDGVTVDGRSDQHI 57
OY 61 KIQLAERGVVSIKVCANRYLANKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120

DB 58 QDLAESAESVGEVYIKSTETGGTLADTDGLYGSQTPNEBCLFLERLEENHNTYISKH 117
OY 121 T--SWYVALKRGYKLGSKTPGCKAILFLPMASKS 155
DB 118 AEKNWFVGLKKNKSGCKRGRPRTHYGOKAILFLPLPVSS 154
RESULT 13
FGL_MOUSE
ID FGL_MOUSE STANDARD; PRT; 155 AA.
AC P10935;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1989 (Rel. 11, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN Fgfl OR FGF-1 OR FGFA.
OS Mus musculus (Mouse), and
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Mus.
OX NCBI_Taxid=10090, 10116;
[1]
RN RP SEQUENCE FROM N.A.
RC SPECIES=Rat;
RX MEDLINE=89240051; PubMed=2470029;
RA Goodrich S., Yan G.C., Bahnenburg K., Mansson P.E.;
RT "The nucleotide sequence of rat heparin binding growth factor 1
RT (HBGF-1).";
RL Nucleic Acids Res. 17:2867-2867(1989).
RN RP SEQUENCE FROM N.A.
RC SPECIES=Mouse;
RX MEDLINE=90201563; PubMed=2318343;
RA Hebert J.M., Basillico C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN RP SEQUENCE FROM N.A.
RC SPECIES=Mouse;
RX MEDLINE=97128312; PubMed=8927905;
RA Madral F., Hackshaw K.V., Chiu I.M.;
RT "Cloning and characterization of the mouse Fgf-1 gene.";
RL Gene 179:231-236(1996).
RN RP SEQUENCE FROM N.A.
RC SPECIES=Mouse; STRAIN=BALB/C;
RX MEDLINE=97094746; PubMed=8939980;
RA Alam K.Y., Frosthalm A., Hackshaw K.V., Evans J.E., Rotter A.,
RA Chiu I.M.;
RT "Characterization of the 1B promoter of fibroblast growth factor 1
RT and its expression in the adult and developing mouse brain.";
RL J. Biol. Chem. 271:30263-30271(1996)
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL; X14232; CAA32448.1; -;
DR EMBL; M30641; AAA37618.1; -;
DR EMBL; U36459; AAC52969.1; -;

DR EMBL: U36457; AAC52969.1; JOINED.
 DR EMBL: U36458; AAC52969.1; JOINED.
 DR EMBL: U67610; AAC52907.1; -
 DR PIR: S04147; S04147.
 DR PIR: D37360; D37360.
 DR HSSP: P05230; 1RML.
 DR MGI: M61; 95515; Fgf1.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; ILL_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; ILLHBGF.
 DR ProDom: PD00831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 FT PROPEP 1 15
 FT CHAIN 16 155
 FT BINDING 24 28
 FT BINDING 113 116
 SQ SEQUENCE 155 AA; 17418 MW; 8880E4FF0FBAA161 CRC64;

Query Match 49.0%; Score 404.5; DB 1; Length 155;
 Best Local Similarity 53.5%; Pred. No. 2.9e-35;
 Matches 84; Conservative 17; Mismatches 51; Indels 5; Gaps 2;

OY 1 MAAGSTTTPALPEDGSGAFPFGHFKDPKRLYCKNGGFRLRHPDGRVGVREKSDPHI 60
 DB 1 MAGEITTTAALTEKN---LPPGNKKRKLKLYCSNGGHFLRLIPGYVDGTRDSQHI 57
 OY 61 KIQLAEEGVVSVKIGVCANRYLAMKEDG3LLASKCVDCECFEERLESNNVTYSRKY 120
 DB 58 QQLSAESGEVYIKSTETGYLAMDTSGLLYGSQTPSECLFLELENNHVTYSKHH 117
 OY 121 T--SWYVALKRTGQYKLGSKTGPQKALIFLPM 155
 DB 118 AEKNMFVGLKNGSKRGPRTHYGOKALIFLPLVSS 154

RESULT 14
 FGF1_PIG STANDARD: PRT; 152 AA.
 AC P20002;
 DT 01-FEB-1991 (Rel. 17, Created)
 DT 01-FEB-1996 (Rel. 33, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF) (Alpha-endothelial cell growth factor) (Fragment).
 DE FGF1 OR FGF-1.
 OS Sus scrofa (Pig).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.
 OX NCBI_TaxID=9823;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Heart;
 RX MEDLINE=92062117; PubMed=1719973;
 RA Schmidt M., Sharma H.S., Schott R.J., Schaper W.;
 RT "Amplification and sequencing of mRNA encoding acidic fibroblast growth factor (AFGF) from porcine heart.";
 RL Biochem. Biophys. Res. Commun. 180:853-859(1991).
 RN [2]
 RP SEQUENCE OF 22-41.
 RX MEDLINE=892331704; PubMed=27114282;
 RA Quinkler W., Maasberg M., Bernotat-Danielowski S., Luethe N.,
 RT Sharma H.S., Schaper W.;
 RT "Isolation of heparin-binding growth factors from bovine, porcine and canine hearts.";
 RL Eur. J. Biochem. 181:67-73(1989).
 CC - FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND

CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC - SUBUNIT: MONOMER.
 CC - MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
 CC THAN DOES BFGF.
 CC - SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC or send an email to license@sib-sib.ch).
 CC -----
 DR EMBL: X60317; CAA42869.1; -
 DR PIR: S03954; S03954.
 DR HSSP: P05230; 2AXM.
 DR InterPro: IPR002209; HBGF_FGF.
 DR Pfam: PF00167; FGF; 1.
 DR ProDom: PD00831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 FT PROPEP 1 15
 FT CHAIN 16 >152
 FT BINDING 22 >152
 FT BINDING 24 28
 FT BINDING 113 116
 FT CONFLICT 31 31
 FT CONFLICT 39 39
 FT NON_TER 152
 SQ SEQUENCE 152 AA; 17103 MW; AE853B0A92F9ABF4 CRC64;

Query Match 48.8%; Score 403.5; DB 1; Length 152;
 Best Local Similarity 54.2%; Pred. No. 3.6e-35;
 Matches 83; Conservative 17; Mismatches 48; Indels 5; Gaps 2;

OY 1 MAAGSTTTPALPEDGSGAFPFGHFKDPKRLYCKNGGFRLRHPDGRVGVREKSDPHI 60
 DB 1 MAGEITTTAALTEKN---LPPGNKKRKLKLYCSNGGHFLRLIPGYVDGTRDSQHI 57
 OY 61 KIQLAEEGVVSVKIGVCANRYLAMKEDGRLASKCVDCECFEERLESNNVTYSRKY 120
 DB 58 QQLSAESGEVYIKSTETGYLAMDTSGLLYGSQTPSECLFLELENNHVTYSKHH 117
 OY 121 T--SWYVALKRTGQYKLGSKTGPQKALIFLPM 151
 DB 118 AEKNMFVGLKNGSKRGPRTHYGOKALIFLPL 150

RESULT 15
 FGF1_BOVIN STANDARD: PRT; 155 AA.
 AC P03968;
 DT 23-OCT-1986 (Rel. 02, Created)
 DT 01-MAR-1989 (Rel. 10, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF) (Prostatein) (Endothelial cell growth factor beta and alpha chains) (Acidic eye-derived growth factor II) (EDGF II).
 DE FGF1 OR FGF-1 OR FGFA OR HBGF-1 OR AFGF.
 OS Bos taurus (Bovine).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
 OC Bovidae; Bovinae; Bos.
 OX NCBI_TaxID=9913;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Retina;
 RX MEDLINE=89083506; PubMed=3205724;
 RA Halley C., Courtols Y., Laurent M.;

RT "Nucleotide sequence of bovine acidic fibroblast growth factor cDNA.";
 RL Nucleic Acids Res. 16:10913-10913(1988).
 RN [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Retina;
 RX MEDLINE=89078619; PubMed=2849564;
 RA Alterio J., Halley C., Brou C., Soussi T., Courtois Y., Laurent M.;
 RT "Characterization of a bovine acidic FGF cDNA clone and its
 RT expression in brain and retina.";
 RL FEBS Lett. 242:41-46(1988).
 RN [3]
 RP SEQUENCE OF 2-155.
 RX MEDLINE=87016918; PubMed=3532107;
 RA Burgess W.H., Mehlman T., Marshak D.R., Fraser B.A., Maciag T.;
 RT "Structural evidence that endothelial cell growth factor beta is the
 RT precursor of both endothelial cell growth factor alpha and acidic
 RT fibroblast growth factor.";
 RL Proc. Natl. Acad. Sci. U.S.A. 83:7216-7220(1986).
 RN [4]
 RP SEQUENCE OF 2-155.
 RX MEDLINE=87026586; PubMed=3768327;
 RA Crabb J.W., Ames L.G., Carr S.A., Johnson C.M., Roberts G.D.,
 RT "Complete primary structure of prostatiopin, a prostate epithelial
 RT cell growth factor.";
 RL Biochemistry 25:4988-4993(1986).
 RN [5]
 RP SEQUENCE OF 16-155.
 RX MEDLINE=86070224; PubMed=4071057;
 RA Gimenez-Gallego G., Rodkey J., Bennett C., Rios-Candelore M.,
 RA Disalvo J., Thomas K.;
 RT "Brain-derived acidic fibroblast growth factor: complete amino acid
 RT sequence and homologues.";
 RL Science 230:1385-1388(1985).
 RN [6]
 RP SEQUENCE OF 16-44, AND COMPOSITION.
 RX MEDLINE=86055750; PubMed=4065099;
 RA Boehlen P., Esch F., Balrd A., Gospodarowicz D.;
 RT "Acidic fibroblast growth factor (FGF) from bovine brain:
 RT amino-terminal sequence and comparison with basic FGF.";
 RL EMBO J. 4:1951-1956(1985).
 RN [7]
 RP SEQUENCE OF 16-56 FROM N.A.
 RX MEDLINE=86261806; PubMed=2425435;
 RA Abraham J.A., Merz A., Whang J.L., Tumolo A., Friedman J.,
 RA Hjerriid K.A., Gospodarowicz D., Fiddes J.C.;
 RT "Nucleotide sequence of a bovine clone encoding the angiogenic
 RT protein, basic fibroblast growth factor.";
 RL Science 233:545-548(1986).
 RN [8]
 RP SEQUENCE OF 16-45.
 RX MEDLINE=89231704; PubMed=2714282;
 RA Quinkler W., Maasberg M., Bernotat-Danielowski S., Luethe N.,
 RA Sharma H.S., Schaper W.;
 RT "Isolation of heparin-binding growth factors from bovine, porcine and
 RT canine hearts.";
 RL Eur. J. Biochem. 181:67-73(1989).
 RN [9]
 RP SEQUENCE OF 1-18 FROM N.A.
 RA Philippe J.M., Renaud F., Desset S., Laurent M.;
 RL Submitted (JUL-1992) to the EMBL/Genbank/DBJ databases.
 RN [10]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RX MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T.,
 RA Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth
 RT factors.";
 RL Science 251:90-93(1991).
 CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.

CC -!- SUBUNIT: MONOMER.
 CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
 CC THAN DOES bFGF.
 CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC or send an email to license@isb-sib.ch).
 CC -----
 CC EMBL: M13439; AAA30516.1; -
 CC EMBL: X13221; CAA31610.1; -
 CC EMBL: X14032; CAA32192.1; -
 CC EMBL: M35608; AAA30517.1; -
 CC EMBL: X66446; CAA47063.1; -
 CC EMBL: M97660; AAA30563.1; -
 CC EMBL: M97661; AAA30564.1; -
 CC PIR: A01385; GKBOA.
 CC PIR: A25043; A25043.
 CC PIR: B25043; B25043.
 CC PIR: C25043; C25043.
 CC PIR: A24477; A24477.
 CC PIR: B24663; B24663.
 CC PIR: S02102; S02102.
 CC PDB: 1BAR; 31-OCT-93.
 CC PDB: 1AFC; 31-OCT-93.
 CC InterPro: IPR002209; HBGF_FGF.
 CC InterPro: IPR002348; ILL_HBGF.
 CC Pfam: PF00167; FGF; 1.
 CC PRINTS: PR00262; ILLHBGF.
 CC ProDom: PD000831; HBGF_FGF; 1.
 CC SMART: SM00442; FGF; 1.
 CC PROSITE: PS00247; HBGF_FGF; 1.
 CC Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
 CC 3D-structure.
 CC PROPEP 1 15
 CC CHAIN 2 155
 CC CHAIN 16 155
 CC CHAIN 22 155
 CC MOD.RES 2 2
 CC BINDING 24 28
 CC STRAND 113 116
 CC STRAND 27 31
 CC STRAND 32 34
 CC STRAND 37 40
 CC STRAND 42 43
 CC STRAND 46 49
 CC STRAND 55 57
 CC HELIX 59 61
 CC STRAND 69 69
 CC STRAND 71 73
 CC STRAND 79 82
 CC STRAND 84 85
 CC STRAND 87 91
 CC HELIX 96 98
 CC STRAND 100 100
 CC STRAND 103 104
 CC STRAND 106 107
 CC STRAND 110 111
 CC STRAND 113 114
 CC STRAND 116 121
 CC STRAND 123 123
 CC STRAND 126 126
 CC STRAND 128 129
 CC STRAND 132 132
 CC STRAND 134 134
 CC STRAND 137 137
 CC HELIX 140 141
 CC TURN 144 145
 CC TURN 147 150
 CC STRAND

SEQ SEQUENCE 155 AA; 17493 MW; F636641F189F9BED CRC64;

Query Match 47.6%; Score 393.5; DB 1; Length 155;

Best Local Similarity 52.2%; Pred. No. 4.1e-34; Matches 82; Conservative 19; Mismatches 51; Indels 5; Gaps 2;

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QY 1 MAAGSITTLPALPEDGSGAPPGHFKDPKRLCYCKNGGFRLIHDPDGRVDGVREKSDPHI 60
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 1 MABETTTFALTIEKEN--LPLGNYKKPKLLYCSNGSYFLRLIPDGIYDGTKDRSDQHI 57
    :||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 61 KLQLQAEERGVVSIKGCANRYLANKEDGRLIASKCVTDECFFPERLESNNYNTYRSRKY 120
    :||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 58 QLQLCAESIGEVYIKSTETGQFLAMDITDGLYGSQTPNEECIFLERLENNHYNTYISKKH 117
    :||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 121 TS--WYVALKRTGQYKLGSKTGPQOKATLFLPMSAKS 155
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 118 AEKHWFVGLKKNRSGKSLGPRTHFGOKATLFLPLPVSS 154
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
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Search completed: June 7, 2002, 14:46:43
Job time: 614 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:13 ; Search time 78.17 seconds
(without alignments)
343.024 Million cell updates/sec

Title: US-09-802-365-8

Perfect score: 826
Sequence: 1 MAAGSITTLPALPEDGGSGA.....GSKTGPQKALFLPMSAKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database :

SPTREMBL_19:*
1: sp_archaea:*
2: sp_bacteria:*
3: sp_fungi:*
4: sp_human:*
5: sp_invertebrate:*
6: sp_mammal:*
7: sp_mmc:*
8: sp_organelle:*
9: sp-phage:*
10: sp-plant:*
11: sp-rodent:*
12: sp-virus:*
13: sp-vertebrate:*
14: sp-unclassified:*
15: sp_virus:*
16: sp_bacteria:*
17: sp_archaeap:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	826	100.0	196	4 P78443	P78443 mus sapien
2	768	93.0	153	11 Q925A3	Q925A3 mus musculu
3	742	89.8	170	11 Q60487	Q60487 cavia porce
4	704	85.2	155	13 Q90Y92	Q90Y92 cynops pyrr
5	682	82.6	130	6 O77767	O77767 canis famill
6	585	70.8	111	6 Q9BDX1	Q9BDX1 macaca mula
7	567	68.6	125	13 Q98TD8	Q98TD8 cynops pyrr
8	561	67.9	108	6 Q9N1S7	Q9N1S7 capreolus c
9	490	59.3	109	11 Q925A1	Q925A1 mus musculu
10	486	58.8	112	11 Q925A2	Q925A2 mus musculu
11	476	57.6	101	13 P79706	P79706 cynops pyrr
12	469.5	56.8	146	13 Q07659	Q07659 gallus gall
13	341	41.3	76	6 Q9NOV2	Q9NOV2 ovis aries
14	328	39.7	114	4 Q00527	Q00527 homo sapien
15	328	39.7	114	4 Q16443	Q16443 homo sapien
16	292	35.4	106	6 Q9N1S8	Q9N1S8 capreolus c

17	249	30.1	196	13 Q9YH31	Q9YH31 notophthalm
18	245	29.7	124	13 Q90X05	Q90X05 ambystoma m
19	229	27.7	206	13 Q9YGD8	Q9YGD8 oncorhynch m
20	224	27.1	111	13 Q90X01	Q90X01 ambystoma m
21	216	26.2	208	6 Q9SL12	Q9SL12 sus scrofa
22	213	25.8	191	13 Q9DFC9	Q9DFC9 brachydanio
23	208	25.2	208	13 Q9PYX1	Q9PYX1 xenopus lae
24	208	25.2	212	11 Q9ESL8	Q9ESL8 mus musculu
25	205.5	24.9	207	11 Q9ERS8	Q9ERS8 mus musculu
26	205.5	24.9	207	11 Q9ERS5	Q9ERS5 mus musculu
27	204	24.7	212	11 Q9EST9	Q9EST9 rattus norv
28	203	24.6	208	6 Q9SK97	Q9SK97 macaca fasc
29	202.5	24.5	212	13 Q42407	Q42407 gallus gall
30	195.5	23.7	134	13 Q90X03	Q90X03 ambystoma m
31	194.5	23.5	213	6 Q9N1B9	Q9N1B9 ovis aries
32	193	23.4	208	4 Q96P59	Q96P59 homo sapien
33	191.5	23.2	186	6 Q9SL47	Q9SL47 mustela vis
34	189.5	22.9	237	13 Q9IAL6	Q9IAL6 gallus gall
35	189	22.9	112	13 Q90XP9	Q90XP9 ambystoma m
36	188.5	22.8	252	11 Q89096	Q89096 rattus norv
37	188.5	22.8	253	13 Q9IAI5	Q9IAI5 gallus gall
38	185.5	22.5	185	11 Q9ERN5	Q9ERN5 rattus norv
39	183.5	22.2	59	4 Q9UBK1	Q9UBK1 homo sapien
40	180.5	21.9	181	11 Q924B4	Q924B4 rattus norv
41	179.5	21.7	127	4 Q99517	Q99517 homo sapien
42	178.5	21.6	302	11 Q9CSX5	Q9CSX5 mus musculu
43	175.5	21.2	199	13 Q9IAI3	Q9IAI3 gallus gall
44	174.5	21.1	59	4 Q16089	Q16089 homo sapien
45	174.5	21.1	60	4 Q16588	Q16588 homo sapien

ALIGNMENTS

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ID P78443 PRELIMINARY: PRT: 196 AA.
AC P78443;
DT 01-MAY-1997 (TREMBLrel. 03, Created)
DT 01-MAY-1997 (TREMBLrel. 17, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE 21 KDA BASIC FIBROBLAST GROWTH FACTOR (BFGF).
GN BFGF.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxId=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89184522; PubMed=2538817;
RA Prats H., Kaghad M., Prats A.C., Klagsbrun M., Lelias J.M.,
Riazaun P., Chalou P., Tauber J.P., Amaric F., Smith J.A., Caput D.;
RT "High molecular mass forms of basic fibroblast growth factor are
RT initiated by alternative CUG codons."
RL Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).
RN [2]
RP SEQUENCE OF 81-168 FROM N.A.
RX MEDLINE=93038590; PubMed=14117798;
RA Watson R., Anthony F., Pickett M., Lambden P., Masson G.M.,
Thomas E.J.;
RT "Reverse transcription with nested polymerase chain reaction shows
RT expression of basic fibroblast growth factor transcripts in human
RT granulosa and cumulus cells from in vitro fertilisation patients."
RL Biochem. Biophys. Res. Commun. 187:1227-1231(1992).
DR EMBL: J04513; AA52532.1;
DR EMBL: S47380; A013853.1;
DR HSSP: P09038; IBEF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILI_HBGF.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.

OS Macaca mulatta (Rhesus macaque).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecinae; Macaca.
OX NCBI_TaxID=9544;
RN [1]
RP SEQUENCE FROM N.A.
RA Sekhon H.S., Keller J.K., Spindel E.R.;
RT "Alterations in Collagen and Elastin Gene Expression in Fetal
Pulmonary Vessels in Monkeys Following Prenatal Nicotine Exposure: A
Possible Role of alpha7 Nicotinic Acetylcholine Receptor in Persistent
Pulmonary Hypertension."
RL Submitted (Mar-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF251270; AAK37962.1; -.
DR HSSP; P09038; 2FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1 1
FT SEQUENCE 111 AA; 12633 MW; EC0967A5261F5487 CRC64;
SQ

Query Match
Best Local Similarity 70.8%; Score 585; DB 6; Length 111;
Matches 111; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 43 IHPDGRVDGVEKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 102
DB 1 IHPDGRVDGVEKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 60
QY 103 FFERLESNNYNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFLPMSA 153
DB 61 FFERLESNNYNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFLPMSA 111

RESULT 7
Q98TDB PRELIMINARY; PRT; 125 AA.
AC Q98TDB;
DT 01-JUN-2001 (TREMBlrel. 17, Created)
DT 01-JUN-2001 (TREMBlrel. 17, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR-2 (FRAGMENT).
GN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RA Mizuno N., Hayashi T., Kondoh H., Okamoto M.;
RT "Cynops fibroblast growth factor-2."
RL Submitted (Oct-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB049625; BAB40835.1; -.
DR HSSP; P09038; 1BFG.
DR InterPro; IPR002209; HBGF_FGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1 1
FT SEQUENCE 125 AA; 14244 MW; SC27F41DC6E60C13 CRC64;
SQ

Query Match 68.6%; Score 567; DB 13; Length 125;
Best Local Similarity 87.1%; Pred. No. 5.9e-54;

Matches 108; Conservative 7; Mismatches 9; Indels 0; Gaps 0;
QY 32 LYCKNGGFRLRHPDGRVDGVEKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGR 91
DB 2 LYCKNGGFRLRNSDGRKSDGAREKSDYIKLQLAEEGVVSIGVCANRYLAMDDGR 61
QY 92 IASKCVTDECFEERLESNNYNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFLP 151
DB 62 MALKTITDECFEERLESNNYNTYRSKRTSDYVALKRTGQYKNGSKTGAGOKAILFLP 121
QY 152 SAKS 155
DB 122 SAKS 125

RESULT 8
Q9N1S7 PRELIMINARY; PRT; 108 AA.
AC Q9N1S7;
DT 01-OCT-2000 (TREMBlrel. 15, Created)
DT 01-OCT-2000 (TREMBlrel. 15, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN BFGF.
OS Capreolus capreolus (Roe deer).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;
OC Cervidae; Odocoileinae; Capreolus.
OX NCBI_TaxID=9858;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=TESTIS;
RX MEDLINE=20532861; PubMed=11078967;
RA Wadener A., Blotner S., Gortiz F., Fickel J.;
RT "Detection of growth factors in the testis of roe deer (Capreolus
capreolus)."
RL Anim. Reprod. Sci. 64:65-75(2000).
DR EMBL; AF152587; AAF73226.1; -.
DR HSSP; P09038; 4FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1 1
FT NON_TER 108 108
FT SEQUENCE 108 AA; 12399 MW; 6BC7B7244214567E CRC64;
SQ

Query Match 67.9%; Score 561; DB 6; Length 108;
Best Local Similarity 98.1%; Pred. No. 2.2e-53;
Matches 106; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 42 RIHPDGRVDGVEKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 101
DB 1 RIHPDGRVDGVEKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 60
QY 102 FFERLESNNYNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFL 149
DB 61 FFERLESNNYNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFL 108

RESULT 9
Q925A1 PRELIMINARY; PRT; 109 AA.
AC Q925A1;
DT 01-DEC-2001 (TREMBlrel. 19, Created)
DT 01-DEC-2001 (TREMBlrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.

Query Match 39.7%; Score 328; DB 4; Length 114;
Best Local Similarity 100.0%; Pred. No. 5.3e-28;
Matches 59; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
OY 1 MAAGSITTLPALPEDGSGAPPPGHHKDPKRLXCKNGGFFLRHHPDGRVDGVREKSDPH 59
|||||
DB 56 MAAGSITTLPALPEDGSGAPPPGHHKDPKRLXCKNGGFFLRHHPDGRVDGVREKSDPH 114
|||||

Search completed: June 7, 2002, 14:46:14
Job time: 630 sec

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